Academy of Management

PROCEEDINGS OF ANNUAL MEETING

DECEMBER 28, 1960
ST. LOUIS, MISSOURI

The Academy of Management

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DECEMBER 28,
1960

Edited by
Keith Davis, Secretary-Treasurer

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The Academy of Management
c/o Department of Management
College of Business Administration
Arizona State University
Tempe, Arizona

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Academy of Management

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Costic Roman

Fellows Procedure:
Charles L. Jamison

ANNOUNCEMENT OF 1961 MEETING

Because of demand for a longer meeting to permit better programs and more time for professional visiting, a **two-day** program is tentatively planned for 1961.

Where? New York City, at the New York University Graduate School of Business Administration, 90 Trinity Place. (This is an excellent new downtown facility.)

When? December 27 and 28. (Reserve these dates on your calendar now.)

Who is Program Chairman? Harold F. Smiddy, Vice-President, General Electric Company, New York City. (Send him your program ideas.)

Who is handling arrangements? E. H. Van Delden, Peter Drucker, and Arthur L. Svenson. (They will give you the best!)

Plan now to attend the 1961 meeting.

Academy of Management

Past-Presidents

1960	Joseph W. Towle Washington University
1959	Merten J. Mandeville University of Illinois
1958	Billey E. Goetz Massachusetts Institute of Technology
1957	Alvin Brown Johns-Manville Corporation
1956	Franklin G. Moore University of Michigan
1955	Ronald B. Shuman University of Oklahoma
1954	William R. Spriegel University of Texas
1953	Franklin E. Folts Harvard University
1952	John F. Mee Indiana University
1951	William H. Newman Columbia University
1950	Michael J. Jucius Ohio State University
1949	Erwin H. Schell Massachusetts Institute of Technology
1948	Ralph C. Davis Ohio State University
1941-1947	Robert P. Brecht University of Pennsylvania
*1936-1940	Charles L. Jamison, Founder & Chm. University of Michigan

*The Academy was organized on an informal basis from 1936 to 1940, and was inactive because of World War II from 1942 to 1946.

Twentieth Annual Meeting
Academy of Management

WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI
DECEMBER 28, 1960

8:30 A.M. Women's Building Lounge, Washington University
Registration

8:50 A.M. Louderman Hall 111, Washington University
Greeting
JOSEPH W. TOWLE, Professor of Management, Washington University and President, Academy of Management.
ARTHUR MASON, JR. Acting Dean, Graduate School of Business Administration, Washington University, St. Louis.

9:00 A.M. CONTRIBUTIONS TO MANAGEMENT PHILOSOPHY FROM THE BEHAVIORAL SCIENCES.
Panel Discussion
Moderator, JOHN F. MEE, Professor and Chairman, Department of Management, School of Business, Indiana University.
NICK DEMERATH, Professor of Sociology and Director of the Social Science Institute, Washington University, St. Louis.
*DAVID G. MOORE, Professor and Head of the Department of Personnel and Production Administration, Michigan State University.
Hear an eminent sociologist and an expert in human relations discuss management philosophy and the behavorial sciences.

10:30 A.M. NEW CONCEPTS AND DEVELOPMENTS IN ORGANIZATION
Panel Discussion
Moderator, ALVIN BROWN, retired, formerly Vice President for Finance, Johns-Manville Corporation, New York.
*ALBERT H. RUBENSTEIN, Professor of Industrial Engineering, The Technological Institute, Northwestern University.
*WILLIAM E. SCHLENDER, Assistant Dean, College of Commerce and Administration, The Ohio State University.
Use of empirical studies of organizational behavior, field study techniques, and mathematical models in organization study will be included. Plus modern concepts about a company's organzational unit, span of control, and decentralization.

12:00 Noon LUNCHEON — Prince Hall, Washington University, St. Louis

1:00 P.M. Louderman Hall 111, Washington University, St. Louis
MANAGEMENT AND RESEARCH
Address
Moderator, L. D. BISHOP, Chairman, Department of Business Management, University of Oklahoma.

* Paper included in this proceedings.

ROBERT F. STEADMAN, Vice President for Management Research, American Management Association, New York.

Academy research projects are sponsored by AMA. Hear its executive tell his views about research in the management field.

2:00 P.M. TWO APPROACHES TO COMPUTER SIMULATION

Address

Moderator, MAX D. RICHARDS, Head, Division of Management, College of Business Administration, The Pennsylvania State University.

*KALMAN J. COHEN, Assistant Professor of Economics and Industrial Adminstration, Graduate School of Industrial Administration, Carnegie Institute of Technology.

Professor Cohen, a winner of the 1960 Doctoral Dissertations Competition in Business Administration and Related Disciplines sponsored by the Ford Foundation, will share his latest thoughts on computer simulations.

3:00 P.M. MANAGEMENT WORK SHOPS

Group Participant Discussion Groups

Select group in which you wish to participate. Meeting rooms will be announced at beginning of this session. After an hour discussion, all members will reconvene, and hear a five-minute summary from each group given by its respective moderator. This is your opportunity to discuss with contemporaries one of your favorite management subjects.

GROUP A: UNIVERSITY MANAGEMENT EDUCATION IN FOREIGN COUNTRIES

Moderator, EGBERT H. VAN DELDEN, Professor of Management, Graduate School of Business Administration, New York University.

Typical Questions:

1. How does university management education in foreign countries differ from that of the United States?

2. What is the relative status of the management professor in foreign countries?

GROUP B: MANAGEMENT AND PROFESSIONALISM

Moderator, THOMAS J. LUCK, Executive Assistant, State Farm Mutual Automobile Insurance Company, Bloomington, Illinois.

Typical Questions:

1. Is the practice of management a profession?

2. Should examining boards be established in management?

GROUP C: THE USE OF GAMES IN MANAGEMENT DEVELOPMENT

Moderator, NORMAN H. DEUNK, Manager of Management Development, International Business Machines, Inc., Chicago.

Typical Questions:

1. Are decision-making games truly a simulation of the business situation?

2. Do specialized or generalized games produce more effective results?

GROUP D: THE MANAGEMENT CURRICULUM AT THE UNIVERSITY LEVEL

Moderator, KENNETH H. MEYERS, Professor and Chairman, Department of Production and Operations Management, School of Business, Northwestern University.

Typical Questions:

1. What should be the objectives of a management curriculum at the university level?

2. What curriculum changes have been made by your school since the Gordon and Howell Report?

GROUP E: RECENT DEVELOPMENTS IN HUMAN RELATIONS

Moderator, THOMAS R. BOSSORT, Jr., Associate Professor of Management, School of Business, Indiana University.

Typical Questions:

1. Can Human Relations be taught effectively in the university?

2. What is the strongest aspect of current collegiate instruction in Human Relations? The weakest aspect?

4:30 P.M. BUSINESS MEETING

Contributions to Management Philosophy from the Behavioral Sciences

DAVID G. MOORE
Michigan State University
East Lansing, Michigan

Introduction

There are two questions which we might consider regarding the behavioral sciences and business administration. The first area of interest concerns the part which the behavorial sciences can play directly in the education of the business executive. The second has to do with behavioral science research and business administration. Obviously, the two areas of interest are intimately related since teaching inevitably depends upon effective research. Nonetheless, our formal remarks obviously will be shaped by the particular focus which we take. I should like, therefore, to confine my attention to the behavioral sciences and education for administration. In short, I should like to ask the question, what should the student of business administration take away from courses in the behavioral sciences, particularly as they are applied to the field of organization and administration?

The Present State of the Behavioral Sciences

The student of business administration can take away from the behavioral sciences, pure or applied, only what the behavioral sciences can offer. Much depends, therefore, on the current state of development of these sciences. It goes without saying that the behavioral sciences are not exact sciences like physics or chemistry. Human behavior cannot be readily predicted from a relatively few general laws or principles. In teaching the behavioral science, you cannot begin with elementary propositions and gradually build up a complex system of interdependent propositions which can be manipulated at abstract, mathematical levels. The behavioral sciences are still in an empirical, observational phase. James B. Conant defines science as "an attempt either to lower the degree of empiricism or to extend the range of theory." The practical arts in this view are almost one hundred percent empirical; physics, on the other hand, is almost one hundred percent theoretical — theoretical in the sense that predictions can be made by deduction from general laws and theories. It is apparent that the behavioral sciences have many years of development before they reach a theoretical phase. They are still wrestling with problems of observation and the classification of patterns of human behavior; in other words, they are hardly at the point of the beginning of a science. Only recently can it be said that the observations of the behavioral scientist are better than those of the practical man in the field.

There are a number of reasons why the behavorial sciences have developed so slowly. In the first place, it is difficult to deal experimentally with human beings or with human interaction. Laboratory experimentation involves a deliberate control over variables; but, with human beings, the laboratory itself introduces a new and important variable as the Western Electric researchers found out. Furthermore, it is

often unethical, even immoral, to experiment with the personal lives of other human beings. More than this, it is difficult to control subjectivity in the observation of the behavior of others. The observer is always part of the situation which he is attempting to observe. His mere presense alters behavior. But, even more important, he himself becomes inextricably involved with the situation, oftentimes perceiving what he unconsciously wants to perceive and projecting many of his own needs and emotions into his research. It takes a high degree of discipline and self-awareness to become a good observer of the behavior of others.

In the second place, human behavior is complex. It is always the product of an evolving, dynamic, current reality and an equally dynamic, changing interpretation of this reality. It involves the past plus the present plus a perceived future. When you observe a man's behavior, you cannot tell at first blush whether he is reacting to past events, present circumstances, future possibilities, or all three. He has a sense of time; he has memories and anticipations. He is capable of integrating a myriad of experiences from within, from without, from close-by, from far-away.

In the third place, a human being is not totally a creature of his environment. He integrates his past and present experiences and his anticipation of the future; he perceives and interprets events in terms of his needs and sentiments. In other words, behind his actions and reactions are underlying motives which must be understood if his behavior is to be understood. With people, we must always ask the question, why? This is not true, of course, of physical phenomena. We don't have to ask why the sun rises; it does and that is enough. Nowhere is the problem of underlying motives better illustrated than in marketing research. One example of early motivation research involved a study of the reactions of housewives in a particular neighborhood to venetian blinds versus lace curtains. One group of housewives clearly liked venetian blinds; another group was partial to lace curtains. When asked their reasons for choosing one or the other, both groups maintained that curtains or blinds, whatever their particular preference, were "easier to keep clean." Logic tells us that venetian blinds and lace curtains cannot both be easier to keep clean. Obviously, the housewives in this case were not revealing their true underlying motives; they were simply saying what housewives were supposed to say about their behavior. Careful study revealed that the two groups of housewives enjoyed quite different ways of life. One group was older, more conservative, somewhat hidebound; the other group was younger, modern, more liberal. The two styles of window covering symbolized their different ways of life. The venetian blinds announced to the whole neighborhood, "Here lives a modern family." The lace curtains declared, "Here is a conservative family."

Because of the difficulties involved in studying human behavior, the problems of interpretation, the dynamic, changing, evolving panorama of human affairs, and the problems of underlying motivation, the behavorial sciences have progressed slowly. However, over the past twenty years, with the great increase in social research, techniques of observation and analysis have been considerably improved in the human sciences. While there is as yet no generally accepted theoretical science of man, there are useful models of human behavior, both psychological and social; there are insightful concepts which focus light on various aspects of human behavior; there are well-developed methods of investigation; there are improved analytic techniques which provide greater objectivity in the

analysis of human affairs; and there is finally a wealth of material describing various patterns of human behavior in diverse settings. In short, the behavioral sciences have progressed far beyond the commonsensical observations and judgments of the layman. The administrator or student who feels that he has acquired through some natural process all of the insights and skills that he needs to understand human behavior and make judgments about others is fooling himself. Indeed, most people are completely unaware of the limitations of their personal experiences and the highly subjective, class-bound, culture-bound nature of their observations and judgments. Yet, because they have had to come to grips with human relations throughout their lives, they somehow develop a certainty of judgment which they would never feel in the considerably less complex physical sciences.

The Professional Needs of Students of Business Administration

So much then for the present state of the behavorial sciences! What about the professional needs of the student of business administration? What application can the behavorial sciences have to his career in business? We are not going to invoke the old "bromides" that "business is people" and that "management is the art of getting things done through people." Business is people all right, but it is a lot more than this. Most behavorial scientists would not be expert in running a business; they would not have the necessary knowledge of the complex technical and procedural systems of business no matter how much they might know about people. Running or participating in the running of a business requires a great deal of specific, detailed knowledge. The vision that many have of the business executive, particularly the top business executive, as presiding over the business enterprise and applying broad, unspecific principles of organization and administration while others do the dirty work is a distorted one. By the same token, the business student who feels that he is on his way to becoming a vice-president by avoiding specifics and keeping his mind clear of particulars which might clutter his freedom to dream as he wishes is not really preparing himself for anything.

The problem of professional education in business is not a question of general knowledge versus specific knowledge. Highly specific knowledge is inevitably required. However, the panorama of business and industrial life in America is so detailed, so complex, and so dynamic that no school of business could possibly undertake to teach the technical, cultural, and behavioral aspects of every corner of the business world. There would not be enough professors to keep up with the constantly changing reality of this unfolding universe. Even if it were possible to provide the student with up-to-date, detailed information regarding all the diverse aspects of the business world, the student would be acquiring a great deal of specific knowledge which he would probably not use. As a consequence, while the student of business administration must acquire the scholarly habit of learning and retaining detailed knowledge, he must gain much of his specific knowledge about business practices, structures, and behavorial patterns after he has left the university and entered business itself.

The key to effective professional education in business at the university level is the development within the student of the analytic and observational skills which will permit him to gain a quicker, deeper, and more useful knowledge of various aspects of business once he is in the field. It lies in the ability of the student to understand complex, interdependent, multi-dimensional situations. It lies also in the ability of the student to trans-

late his knowledge into useful action; that is, in his ability to make useful, ethically sound, and integrated decisions about the complex reality with which he will, as a business executive, be confronted. The student of business administration with these skills may graduate without highly specific knowledge of many of the actual procedures and practices current in our business society. He may not know the "Five Rights of Merchandising" as they are developed within Sears, Roebuck and Co.; he may not know how airlines schedules are set up within United Airlines; he may be completely unaware of the specific accounting practices of Western Electric; but he will be able to learn about any of these, place them in their proper setting, offer ideas, and undertake new developments in any procedural or practice area in the company of his choice.

What are some of the analytic and decision areas in which the student of business administration should develop great skill? As a business executive, he will be primarily concerned with interacting systems of one kind or another. The business executive is a conceiver, builder, integrator, utilizer, adjuster, and maintainer of dynamic, interdependent systems of human and technological interaction. This concept may be difficult to grasp at first blush since it attempts to state abstractly the essential activities of the business executive. Putting it in another way, we can say that the business executive is primarily concerned with structure and the events and especially the relationships among events which must occur if the structure is to come into being and continue to exist. The business executive must develop the skills of understanding large and complex systems of technical and human interaction and of linking together and holding together various and diverse activties and events.

The task of the business executive is not unlike that of the engineer at least insofar as the form of his activities is concerned. The engineer is concerned with the building of complex machines or extended technological processes from unit-acts or events involving motion, forming, cutting, and shaping operations, chemical processes, and what have you. Like the business executive, the engineer builds interacting structures of limited purpose and dimensions; he abstracts out of the total universe of actual or possible events only those which are appropriate to his purposes. However, the work of the engineer and the work of the business executive differ in certain very important respects. The executive is primarily concerned with the building of human structures and the linking together of existing or possible human actions into complex interacting human systems. This difference introduces a great many new and complex elements into the job of the business executive. The job of the engineer is finished once he has perceived and described the interconnectedness among the events necessary for a particular operation or total process. His problem of linking together various and diverse events and actions ends once he has conceived the essential chronology and order of the unit-events which must occur if over-all purposes are to be accomplished. His task, therefore, at least insofar as binding and linking together events are concerned, is essentially logical and involves time and spatial arrangements only. Back in the World War I days when notions of efficiency were rampant and engineering circles, a common practice among engineers planning plant layouts and technological organizations was to draw a straight-line and then to attempt to arrange machines, processes, and work flow along this straight-line. They could do this because their problems were essentially chronological and geometric.

In the case of the business executive, the problems of linking together various and diverse human events are enormous. People don't stay put like machines and physical events do. They can be arranged logically, but they slip out of these arrangements. They have their own purposes and motives which must be taken into account. Thus, the business executive must not only conceive structures as the engineer does, but he must simultaneously consider how to link together the various human events which must transpire if the total structure is to be workable. He must bring into his considerations not only the actual or possible human activities which are needed to build and maintain a business enterprise but also the inducements and other binding forces which are necessary to insure that the events occur in the order and at the time required.

One other important distinction between the work of the engineer and the work of the business executive! The engineer's problems of structure are essentially linear. He has clearly in mind an end-product. His problem of conceptualizing is typically one of developing an orderly set of events which have a beginning and ending no matter how complex or extended. The business executive is dealing with an interacting system which is essentially circular. It has no beginning or ending. The problem of the Ford Motor Company does not end when the car moves off the assembly-line under its own power. Nor does it end when the car is turned over to the customer. Nor does it end when quarterly dividends are declared. Nor does it end when a contract is signed with the United Auto Workers. Nor does it end when the year-end financial report is made. In short, there is no one end-product of a business enterprise. It does not exist for any single purpose but has multiple purposes which are at once means and ends. Indeed, it can be said that a business enterprise is a complex, self-sustaining system of human interaction which creates products of psychological, social, and economic value which are in turn fed back into the system to sustain and nourish it. As such, it has organismic qualities in that it is a highly interdependent system of differentiated activities which together create an integrated enterprise which exists for the sake of its own survival and growth. Any of the differentiated, individual activities has no meaning separate from the whole enterprise but, by the same token, the enterprise has no meaning that can be distinguished from the satisfactions of those who participate in it — more specifically from the satisfactions of investors, customers, employees, management, sources of supply, general public, etc.

A final distinction between the activities of the business executive and the engineer is the extent of personal involvement of each in the phenomena with which each must deal.. The executive is part of the human structure and interaction processes which he builds, develops, and maintains. The engineer of course can stand back from the physical phenomena which he brings together. He can view these events more or less objectively. The executive constantly deals with subjective and objective phenomena.

Our comparison of the task of the business executive with that of the engineer is not meant to be invidious or an effort to depreciate the work of the engineer. The point is that the engineer's task is hard enough, but the task of the business executive, properly conceived, is even harder. For his problems of conceptualization are multi-dimensional and circular; the elements with which he works are dynamic and changing; he must concern himself with processes and techniques by which various events

can be bound together in intricate, interdependent relationships; and finally, he must do all this when he himself is subjectively and personally involved with the structures which he builds.

With these considerations in mind, then, regarding the present state of the behavioral sciences and the professional needs of students of business administration, we can gain some insight into what the student should get from a study of applied behavorial science.

Concepts

At the outset, the student of business administration needs an understanding of concepts which will permit him to view and identify events, patterns of behavior, and relationships in complex, interacting systems of human endeavor. Such concepts are essentially "beams of light," as Professor Herbert Blumer once put it, which can be focused on various aspects of human behavior and, as such, improve our powers of observation. I am thinking here of course of such concepts as *culture,* belief systems, values, norms, rules and ideologies, *social structure,* status, social role, interaction, class, caste, social personality, social character, etc. I am thinking of these not just as labels and something elegant to talk about, but as various aspects of the unending, intricate process by which individual human beings acquire beliefs and understandings, embody these beliefs in the world around them, and adjust and change as the world changes.

Functional Analytic Skill

Coupled with his conceptual understandings, the student of business administration needs to learn to think in a "functional" way. I am not using the term *functional* in the business sense but rather in the sociological sense. Basically, this means that he must learn to observe the interdependence of events within a system of interaction, how one event has consequences which are functional or dysfunctional to other events. He should begin to comprehend the great and intricate relational networks which bind together business enterprise and how action in one area of these great and intricate systems frequently reverberates and affects activities which seem far removed from the original action. He should acquire the prudence which every administrator should have of searching for unintended consequences. He should comprehend the intimate relationship among the technological, moral, and supernatural orders of our society and have the good sense to bring these together in his thinking and in the decisions that he makes.

Value-Formation, Conflict, and Agreement

The student of business administration should have some understanding of the process by which men form values, beliefs, attitudes, and ideologies since these are crucial not only to his own decisions but also to his understanding of organization. One of the major skills of the business executive is dealing with differentiated values and bringing people of divergent interests and abilities together into interacting systems of relationships. He must learn to deal with the reality of diverse beliefs, the reality of value-conflict, and the processes through which value-differences are reconciled, accommodated, integrated, or otherwise resolved.

Models of Business Organization and Business Enterprise

The student of business administration should acquire the ability to design various models of business organization, business enterprise, and

administrative action-systems. To be effective in this area, he must develop the almost automatic skill of perceiving and evaluating the assumptions which underlie these various models and designs—the underlying assumptions regarding human behavior and human relations. He should also be able to assess the consequences of various administrative and organizational designs in order to take advantage of the strengths of various designs and shore up their weaknesses. Indeed, much of the skill of administration lies in buttressing administrative and organizational designs of limited dimensions in order to mitigate inherent weaknesses.

Role of the Business Executive

Since the business executive is himself a part of the systems which he seeks to develop and control, he must have an intimate understanding of his own role, the factors which motivate him, the way in which the executive organization operates, patterns of success and failure in the executive role, and finally the program of personal development which the aspirant to high-level executive positions must set for himself if he is to provide effective leadership within one of the most important institutions in our society.

Human Behavior in Diverse Settings

Finally, the student of business administration must become acquainted with human behavior in diverse settings. He needs the comparative knowledge typical of the social anthropologist and clinical psychologist since truly insightful "clinical" understanding of human behavior can best be achieved through comparative analysis. When the student can begin to see that event "A" is like event "B" and that process "X" is like process "Y" and when he can draw analogic conclusions from these comparisons, he is powerfully equipped to make adequate judgments and projections from his observations of given situations. At present, there are a number of excellent case-research studies of human behavior in the business setting. The student of business administration should be intimately familiar with all of these. He should keep in mind, however, that he is not simply trying to understand behavior within the business setting inasmuch as this narrows his scope. His objective, at least in part, is to seek out diversity, to achieve a cosmopolitan view, to open his mind to a variety of belief systems. He vitally needs a deliberate extension of his horizons because of the provincialism and localism which naturally occur among those who concentrate their attention heavily upon one or another institution within our society.

These, then, are some of the contributions which I believe the behavioral sciences, properly applied and taught, might make to the teaching of management and the education of the student of business administration.

Recent Breakthroughs in Methods of Research on Organizations

ALBERT H. RUBENSTEIN
Professor of Industrial Engineering
Northwestern University

Many of us maintain the image of the basic or pure researcher in science as the lone wolf who operates in the solitude of his one-man laboratory or at his desk. Paper and pencil or chalk are his main weapons against the unknown, in addition to his knowledge and reasoning power.

We have often tended to regard the equipment-filled large laboratory or the team of researchers milling around as characteristic of the more applied or less basic research effort.

While this image has never been completely accurate in the modern scientific era, it is becoming less and less accurate today in most fields of scientific research—physical, life, and behavioral. It is true that most of the important breakthroughs in scientific theory have been the result of the reasoning power or sudden insight of individuals. But it is also true that many of these individuals have worked up to the point of breakthrough or insight and after that point in environments characterized by groups of people and complexes of equipment.

There is hardly an area of basic research today that has not benefited, and in many cases depended on, the development and availability of new equipment and techniques for observing, measuring, analyzing, or simulating the phenomena under study. Some examples are the cyclotron, the reactor, the high altitude balloon, the arctic airlift, the high speed computer, the ultracentrifuge, the electron microscope, and many more.

All this is a prelude to saying that if the field of organization theory—which is indeed emerging as a field for scientific study—is to progress, it too must utilize new tools and equipment for research.

Some of these techniques and tools are already in use, although on a very limited scale. Most of them are not as dramatic as high altitude balloons, satellites, or nuclear reactors. For the purposes of building organization theories, however, they may be equally powerful.

I should like to discuss four such tools or techniques, some of which have been in use for as long as 30 years, some for only 10. In my opinion, they have not as yet been fully exploited as research tools to develop organizational theories which can help us to explain, predict, and eventually to systematically influence organizational behavior. These four tools are:

1. The small group experimental laboratory
2. Simultation of behavior on computers and in "almost-real-life" situations
3. Mathematical models
4. The field study methods of the anthropologist

Before discussing each of these in turn, I would like to make a comment about the level of activity and the boundaries of the field of research

in organization theory. As an outside estimate of the approximate level of research in organization theory, we can look at a National Science Foundation figure for total costs for research and development in social sciences in colleges and universities in 1958.[1] This, of course, included a lot of work that could not, by any stretch of the imagination, be called research on organization theory; but this excess probably balances out the work on organization theory in such places as Rand Corporation, the Air University, etc., which are not included in the survey and the proportion of work in psychology that is related to organization theory.

This total is a little less than $24 million, an amount equal to the annual research and development budget of a number of individual industrial corporations. The situation has improved somewhat, due to increased government and foundation support, but is still at a fairly low level compared to research in the physical and life sciences.

With respect to the boundaries of the field, I find it useful to visualize them as wide open, for the present, as our traditional disciplinary definitions will permit us. The criterion for inclusion that I propose in this early stage of research on organization theory is: any contribution or potential contribution, deliberate or not, from any field, that increases our understanding of the behavior of people in organizations. Thus I would include the work of some psychologists, sociologists, economists, mathematicians, anthropologists, statisticians, biologists, animal sociologists, and various types of engineers, as well as scientifically minded practicioners such as businessmen and administrators of various kinds. Members of all of these professional specialties and more have already made contributions, some unwittingly, to our ability to understand, predict, and influence organizational behavior such as:

Communication
Decision-making
Leadership
Control and evaluation
Power and influence
Work assignment and work flow

In addition to the diversity of disciplinary fields from which contributions to organization theory are coming, it is also interesting to note the diversity of approach or method employed. One reason that the field of "organization theory" appears so un-unified and disorderly to an observer is because it *is* un-unified and disorderly, in terms of common concepts, research methods, and objectives of the researchers.

In attempting to classify current research in this area, the following dimensions might be useful. Each person working in the field can be cross-classified according to several of these dimensions, although I hesitate to make the actual classifications of fellow researchers in this field outside of the classroom. (Sometimes categories are employed as epithets!) The suggested dimensions are:

1. A continuum ranging from *operational or positivistic* toward one end to what might be called *mystical* at the other end. This dimension relates to the source from which the researcher is willing to accept his data. In the first instance, represented best perhaps by the applied anthropologist, he insists that the data he uses be analogous to that employed

[1] National Science Foundation, "Funds for Research and Development in Colleges and Universities, Fiscal Year 1958: A Preliminary Report." *Reviews of Data on Research & Development*, no. 19, April 1960.

in the natural sciences. He insists on observability, measurability, communicability, and reproducibility. In doing so, according to adherents to the other end of the continuum, he may be throwing out the baby with the bath water. He may be getting good measurements, indeed, but he may also be getting trivial measurements, while overlooking the important data that are not so scientifically neat.

The counter-argument, of course, is that data which is generated in the mind of an individual researcher and which is not subject to replication or testing by other researchers is hardly admissible in the game of science. And yet, it is clear even at this early stage, that some of the most brilliant insights in the behavioral sciences have involved this latter type of data. Perhaps refinement and further development of our research methods can reconcile the ends of this particular continuum.

2. Another set of extremes—on a second continuum—is gradually being brought closer together through one of the tools I will discuss. This dimension might be called the *relative degree of abstraction* or the *verbal-quantitative* continuum. Here the extremes are represented by, on the one hand, verbal descriptions of phenomena, variables, relationships, and theories. On the other hand is the extreme use of mathematical models and the language of mathematics to represent these same things.

Unfortunately, some of the reconciliation I referred to is more apparent than real, due to the investment that individual researchers have in their own particular language. One group might argue that mathematics is too wasteful of information and sacrifices the richness of data available on the verbal level for the perhaps dubious advantage of precision.

The mathematically-minded will argue, of course, that ordinary English or disciplinary jargon is too loose and *inexact* for any useful analytical purposes. The reconciliation of the people at the extremes is not easy. The great hope lies in those people who are competent in both languages and who can translate from one into the other.[2] Such people are being trained in small numbers through the efforts of various universities and foundations, but many more are needed.

3. A third dimension, where reconciliation of the extremes may be a forlorn hope, at least in some areas, is represented by a continuum we might call *Prescriptive . . . to . . . Descriptive.* This is not the same sense in which descriptive is often used—to connote verbal. Another set of words for this continuum, well known to economists, is *Normative . . . to . . . Positive.*

The issue here is whether the researcher is primarily interested in stating "theories" or principles which are *prescriptive*, in the sense that they tell people how they *should* behave, or whether he is primarily interested in stating theories that are *descriptive*—merely describing how people *do*, in fact, behave. In the latter case, he leaves it up to the consumer of his theories to make inferences about how he *ought* to behave.

In physical science, this dimension poses little difficulty, since the criteria for theory are clear: does your theory predict actual behavior and can it be tested in a generally accepted systematic way by any competent researcher. Physicists and chemists do make statements that appear prescriptive or normative, but they are only superficially so. Such a statement, if made properly, will have the form: "You should behave in such-and-such a way because if you do, these will be the consequences, and they can be demonstrated empirically or experimentally."

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[2] James Coleman, "Rashevsky's Social Behavior Models." Bureau of Applied Social Research, Columbia University, August 1952.

This is in sharp contrast with the normative and prescriptive statements which are frequently encountered in the behavioral area. Many of them have the form: "You should behave in such and-such a way because I tell you to and I know because of my superior experience or reasoning power."

4. A fourth dimension, and one that is much less controversial and emotionally charged, might be called a *"taste"* continuum. It describes the variation in tastes of researchers for the specific *level* of phenomena which they choose to study. Quite often this choice stems from deep conviction that the level chosen is the only *proper* one for an understanding of organizational behavior, but there is no good evidence yet to support such a contention by any group of partisans along this continuum. This is the continuum that unites, rather loosely, so many different disciplines in the study of organizational behavior. It ranges from the detailed study of *individual behavior,* or even further, the study of the *individual roles* taken by an individual in an organization, through *small face-to-face groups, larger aggregates* that are major parts of an organization, through *whole organizations* such as business firms or hospitals, into *classes of organizations* such as labor unions, and finally perhaps into studies of *societies as a whole.*

People studying all of these levels have already made and continue to make contributions to organization theory, according to my earlier criterion. The fond hope of many of them is that a full understanding of behavior at their level—the individual or the group or the whole organization—will lead to answers at all other levels.

These, of course, have been arbitrarily chosen categories or dimensions. Alternative methods of slicing the field may be equally useful in helping to prognosticate about the future of research in this field and for purposes of overall research strategy.

The first of the research tools I want to discuss is perhaps the best known of the four. It is also the only one that is truly a piece of equipment or hardware analogous to some used in the natural sciences. This is the Small Group Laboratory. In its pure form it is a complex instrument for establishing experimental conditions and providing observations of the experiment in progress. One of the earliest such laboratories, perhaps the first, was the one at Harvard in the Department of Social Relations, designed and built under the direction of R. F. Bales over ten years ago.[3] Its principal feature was a one way mirror for observing the members of small groups without, in turn, being observed.

Certainly this was not the first time that anyone had observed small groups in action, but with the development and refinement of the lab oratory, a degree of control began to be achieved which was a distinct advance in the art of experimentation. Other rooms were designed and built, some based directly on the Harvard one, others incorporating innovations.

At the same time that such experimental rooms—and there are now dozens of them in the U. S. and abroad—helped toward achieving the experimenter's dream of a behavioral experiment not influenced by the presence of the experimenter, it has raised certain ethical and practical questions associated with secret observation. Such questions are not unique to this research method; they also apply to the participant-observer in field studies and the role of the experimenter in simulation studies.

[3] R. F. Bales, *Interaction Process Analysis.* Addison–Wesley, Cambridge, Mass., 1950.

They do come closest, however, to our cultural image of white mice or guinea pigs being manipulated in a cage.

Despite such possible drawbacks, the small group experimental room has been the first real experimental tool or piece of equipment for studying organized human behavior. As one might expect, when researchers at M.I.T. became interested in small group research—notably the famous Bavelas experiments—[4] they added technological refinements in the form of electronic controls and analytical tools, i.e. a computer.

The question of what researchers do with these experimental rooms is another matter. One of the major drawbacks that has been recognized in some fields of physical sciences research is the tendency to become equipment-centered and to carry out studies which are adaptable to the tools available, whether they are significant or of prime interest to the researcher or not. This tendency is noticeable in the behavior of many engineers who rush into the laboratory and begin manipulating equipment in favor of sitting and developing adequate theory and hypotheses.

Some of the small group experimenters, with or without the aid of the experimental lab, are primarily interested in small group phenomena as such. They may see possible direct applications of findings to committees, problem-solving groups, or play and work groups; or they may, as one of my colleagues is, be fascinated by the esthetics of the experimental group itself as a phenomenon worth studying, even if the experimental groups consist of the perennial college sophomores.

Other small group experimenters are interested in the kind of extrapolations or interpolations. I mentioned in discussing the fourth dimension—the possibilities of generalizing from the results of small group experiments to the organization or society as a whole, or interpolating observed organizational behavior through the refinements possible by experimentation. This latter procedure—the interaction between empirical observation and laboratory experiments—I believe holds great promise for advancing the field.[5] This has been one of the major research strategies of the Research Center for Group Dynamics at the University of Michigan[6] and is being used increasingly by the organizational behavior group at Carnegie Tech.

The second research tool or method is partly hardware and partly experimental design. It is the simulation of organizational behavior. This simulation is being performed in two ways: on high speed computers and in organizational laboratories.

Simulation by computer is just getting under way, with only a few actual studies in the literature. One of the earliest of these was the simulation of small group decision-making done in the Summer of 1951 at the Rand Corporation. The start of this exercise was to write a series of memoranda setting forth the essential features of the small group interaction process as observed by Bales in his small group laboratory. A. S. Householder rewrote some parts of these interaction models in mathematical form and prepared flow diagrams to guide a Monte Carlo computation of the models.[7] Severe mathematical and computational difficulties were

[4] A. Bavelas, "Communication Patterns in Task-Oriented Groups." *Journal of Acoustical Society of America*, 1950, pp. 725–730.

[5] Nicholas J. Demerath and John W. Thibaut, "Small Groups and Administrative Organizations." *Admiinstrative Science Quarterly*, vol. 1, no. 2, September 1956.

[6] Harold Guetzkow, ed., *Groups, Leadership and Men.* Carnegie Press, Carnegie Institute of Technology, 1951.

[7] R. F. Bales, M. M. Flood, and A. S. Householder, *Some Group Interaction Models.* RM–953, Rand Corporation, October 10, 1952.

encountered in this work, including the estimation of parameter values from experimental data.

The most recent computer simulation I am aware of is the current work at Carnegie Tech, reported by Cyert and March,[8] on simulating some of the decision-making behavior of a buyer in a department store, namely, ordering and pricing decisions.

With the increased availability of high speed computational facilities all over the country and increased access to them for behavorial research, this method holds tremendous promise for breakthroughs in the field. The major obstacles encountered by the Rand experimenters, however, still persist. The computer can approach reality only in relation to our systematic knowledge of reality. That is, nonsense instructions on human behavior, fed into a simulation, will produce nonsense results. Computer simulation, despite its great promise, cannot stand alone without adequate formal—that is, mathematical—theory and good empirical or experimental data. The beauty of simulation experimentation, of course, is its economy of time and money (depending on whether you can get computer time free). Organizational parameters such as growth rates, size, status relationships, decision rules, etc. can readily be changed to see what *would* happen, or what *might* happen. One can start with very simple models and gradually increase their complexity so as to approach real life.

The other major method of simulation involves controlled experiments on organizations in an almost-real-life situation. This is about the closest we can come to real, real life, because in real, real life there are no experimenters, at least none that we are aware of.

Again, one of the earliest and still the largest scale simulation of this type was done at Rand, starting about ten years ago.[9] This work has been carried on by the System Development Corporation, an offshoot of Rand, which specializes in this kind of research. The salient feature of this kind of simulation is that actual people are involved, with all of the richness of perception and behavioral potential that is human. The control is achieved through control over the inputs to the system (i.e. information, assigned tasks, etc.), the reward and penalty system, and the ability to manipulate certain other environmental constraints and inter-personal relations. For example, communication patterns can be systematically varied, alternative decision rules can be tried, and so on.

This method of experimentation, used extensively by the military under the heading of war gaming, is a very powerful tool, but very expensive and much less neat (in an experimental sense) than group laboratory experimenting or computer simulation. Control is difficult to achieve, observation is difficult, and the degree of complexity is very high.

Two other examples of such simulation may be mentioned. One is the ill-fated but extremely interesting work at the Air Force Survival Training School,[10] where the degree of reality achieved aroused the public and led to modification of the program. Another is the work currently

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[8] Richard M. Cyert and James G. March, "A Specific Price and Output Model." Carnegie Institute of Technology, Behavioral Theory of the Firm Project, Working Paper no. 23, November 1960.

[9] Robert L. Chapman and John L. Kennedy, "The Background and Implications of the Rand Corporation Systems Research Laboratory Studies." In A. H. Rubenstein and C. J. Haberstroh, eds., *Some Theories of Organization*, Irwin–Dorsey, 1960, pp. 139–146.

[10] E. Paul Torrance, "Function of Expressed Disagreement in Small Group Processes." *Social Forces*, vol. 35, no. 4, 1957.

being done by Harold Guetzkow at Northwestern in simulating international relations.[11]

The third and perhaps most powerful research method in organizational theory has been in general use less than ten years. It is the use of mathematical models for describing and representing organizational behavior. It is also, perhaps, the most controversial.

This controversy is well exemplified in a paper by Abraham Kaplan, called "Sociology Learns the Language of Mathematics."[12] In it he criticizes the vast amount of pseudo-mathematics and non-applicable mathematics that has entered the literature. There have been attempts prior to the recent upsurge in mathematical modeling to apply directly the mathematical methods and specific mathematical models from various fields of science and engineering to the study of organizational behavior. Most of them have not been very useful so far in advancing the field. Their major effect has been stimulatory and in some cases of help in building an abstraction of real life situations. It is possible that as simulation techniques and other data collection and experimental methods advance, some of these models and analytical tools such as servomechanism theory, information theory, game theory, etc., may produce important insights or breakthroughs.

Certainly much has already been gained in making the concepts and data more precise by the introduction of the rigor, and in some cases, specific models or mathematical relationships. One of the most striking examples was the paper by Herbert Simon in which he expressed a number of the basic relationships in George Homan's book, *The Human Group*, in a set of three differential equations.[13]

Among the most exciting possibilities has been the work in stochastic learning theory, decision theory, and other frameworks which can account for the probabilistic and dynamic nature of human behavior. Some of the models in operations research, where it is powerful enough to handle these probabilistic and dynamic aspects, also hold promise for the future.

A milestone in this area was the paper on "Mathematical Models in the Social Sciences," by Kenneth Arrow, over ten years ago.[14] Subsequent work in the field by cross-disciplinary groups is also noteworthy—e.g., the Behavorial Models project at Columbia, the work in the Cowles Commission, the Organization and Psychology group at Rand, and the work at Carnegie Tech.

The fourth tool — the field study methods of the anthropologist — is the one of most direct interest to me in my teaching and research on organization theory. In all the courses in organization theory which I have taught over the past ten years, field studies have been an integral part. At Northwestern, I have just initiated a separate course in organizational field studies as a follow up to the theory course.

With proper interplay between the other research methods and this one, I believe that field study *experiments* — not mere data collection

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[11] Harold Guetzkow, "A Use of Simulation in the Study of Inter-Nation Relations." *Behavorial Science*, vol. 4, no. 3, July 1959.

[12] Abraham Kaplan, "Sociology Learns the Language of Mathematics." *Commentary*, 1951.

[13] Herbert A Simon, "A Formal Theory of Interaction in Social Groups." *American Sociological Review*, vol. 17, no. 2, April 1952.

[14] K. J. Arrow, "Mathematical Models in the Social Sciences." In *The Policy Sciences*, Daniel Lerner and H. D. Lasswell, eds. Stanford University, Stanford University Press, 1951.

exercises or case studies of current practice — provide the greatest hope for increasing our understanding of organizational behavior.

Although the Hawthorne studies incorporated some of the techniques used in such studies, the real impetus to this kind of research was provided by the formation of the Society for Applied Anthropology about twenty years ago in Cambridge. Unfortunately, field studies have not been easily worked into the curricula of most of the social sciences as yet — many prefer the laboratory or the library — and so the total amount of such activity is not very high as yet. There is increasing interest in it, however, and I believe we will see some dramatic results from its use in the next few years.

There are two common categories of such field studies, each with its own advantages and procedural difficulties. The traditional method, borrowed directly from social anthropology, uses an observer who is clearly a researcher — an outsider to the group or organization being studied.

The second kind, which is rather hazardous both methodologically and physically at times, is the participant-observer method. Here the researcher is actually part of the organization being studied, either through design or by chance.

Aside from the high potential for contributions to organization theory, I have found the field study experiment — designed and conducted as rigorously as a simulation or laboratory experiment, but adapted to field circumstances — to be a very valuable teaching device.

One indication that the field of organization theory is being recognized as a legitimate area for research and teaching is the recent appearance of several new books. Several are intended primarily as introductory texts, and the rest as research materials. The titles include: *Personality and Organization,*[15] *Organizations,*[16] *Modern Organization Theory,*[17] and *Some Theories of Organization.*[18] The first two are summary and integrative efforts in which the literature has been brought into the conceptual or methodological framework of the writers. The latter two are collections of research articles in the field.

Two other books — *Models of Man*[19] and *Understanding Organizational Behavior*[20] — are reflections of the particular viewpoints on studying organizational behavior by two people toward the extremes of the second dimension.

Additional evidence for the emergence of organizational theory as a field of cross-disciplinary study is the development, over the past ten years, of major cooperative teaching and research ventures between previously non-cooperating disciplines on several university campuses. For example, at Northwestern we are in the process of developing a between-schools interest in organization theory through the medium of joint

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[15] Chris Argyris, *Personality and Organization.* New York, Harper & Bros., 1957.

[16] James G. March and Herbert A. Simon, *Organizations.* New York, John Wiley & Sons, Inc., 1958.

[17] Mason Haire, ed., *Modern Organization Theory.* New York, John Wiley & Sons, Inc., 1959.

[18] A. H. Rubenstein and C. J. Haberstroh, eds., *Some Theories of Organization.* Irwin–Dorsey, 1960.

[19] Herbert A. Simon, *Models of Man.* New York, John Wiley & Sons, Inc., 1957.

[20] Chris Argyris, *Understanding Organization Behavior.* The Dosey Press, Inc. 1960.

seminars, exchanging graduate students, and co-sponsoring visiting scholars in the field. Thus far we have achieved such cooperation between the schools of Education, Business, Engineering, Speech, and Liberal Arts (which includes our departments of Sociology, Psychology, and Political Science).

With the advent of these new research tools and methods, with the increased interest in organizational behavior by many young people in many disciplines, and with the increased support of these activities by universities and foundations, I look for important developments in organization theory over the next few decades. We will probably not achieve a unified theory of organizations, but will certainly make major advances in our understanding, prediction, and ability to systematically influence organizational behavior.

Some Current Concepts in Organization Theory

By William E. Schlender
Ohio State University
Columbus, Ohio

The objective of this paper is to discuss briefly several current concepts in organization theory. The point of view is that of the so-called traditional management approach.

Many of the newer ideas in organziation theory are the result of developments in the field of human relations and in the field of information-handling technology. While such newer ideas may not be the prevailing ones now, some reconsideration of established theory is being made in the light of the logic on which the newer propositions are based. Unfortunately a thorough evaluaton of these ideas cannot be attempted here. Some opinions on their impact and soundness are ventured, however, where they have influenced the subjects discussed here.

The selected topics for discussion are concepts regarding span of control, decentralization, organization planning units, and control theory.

Span of Control

Few issues in organization theory have been the subject of such diametrically opposed views as that of what constitutes an effective span of control. By this term is meant the number of executives that a superior can personally supervise with effectiveness.

The reason for determining such a span is that, as subordinate managers are added, the number is soon reached beyond which the managerial effectiveness of the superior declines. This point of diminishing effectiveness is not the same for all cases, but the range has generally been placed by some[1] at from three to eight or nine, with exceptions warranted in some cases. Within this range the span may frequently narrow as the top of the managerial scale is reached. The relatively low number reflects the fact that the work of personal coordination with subordinates, and of the relationships among subordinates themselves, becomes difficult at a rate much faster than the rate at which subordinates are added to the span. At least this is so where the subordinates' functions require them to contact each other as well as their common superior. (Obviously, where the complex of relationships is not highly developed, the problem of control is simplified and a wider span is practical. Also, contacts among executives even on the same level, will not be equally distributed. Some individuals, even in a complex span situation, may have relatively few contacts with anyone).

In contrast to this view of the proper span is that which advocates a wide span for effectiveness. As Simon[2] stated it about a dozen years ago, maintaining a narrow span in a growing organization soon increases the number of levels, so that layering results. Communication is made difficult by going through formal channels and through a common superior. A wider span minimizes administrative and social distance created by num-

[1] See, for example, Ralph C. Davis, *The Fundamentals of Top Management* (New York: Harper and Brothers, 1951) p. 276.

[2] Herbert Simon, *Administrative Behavior* (New York: The MacMillan Company, 1948) pp. 26–31.

erous levels. The resulting "flat" organization improves communication and participation; it develops initiative because a wide span encourages delegation of more authority and responsibility.

A third concept regarding span of control has been suggested by Suojanen. He contends that the limited span was taken from the military organization, where administrative differences are sufficiently different from economic and governmental organizations that the span in the former does not fill the same function as in the latter. Elements of uncertainty and rapid change in the military organization contrast with the ability of a large-scale non-military organization to reduce most of its operations to a "routine requiring a minimum of detailed direction."[3] Suojanen believes that social relationships, particularly in a large organization, operate to invalidate what has been an accepted span of control principle. The reasoning appears to be as follows.

Every formal organization is also a series of informal or social groups of individuals. Formal relations of persons in their job become "diffuse system" of "progressive cooperation."[4] Because individuals are able to satisfy personal goals through memership in the group, it acts to integrate personal and organizational objectives. As a consequence, participation develops through the informal group.

This favorable development is actually emphasized in the formal organization as it grows. Similar backgrounds and interests are brought together within specialized organizational units. They unite more easily into an informal or "primary" group and strengthen cooperation and initiative toward a common goal. Such groups in turn operate to reduce the number of relationships that must be coordinated by the superior. They may even function as the *alter ego* of the boss, thus will require little coordination by him.[5]

Suojanen also questions whether the span of control need be exercised by a single superior. While there must be a centralized coordinating authority, this does not need to be vested in one person, but rather it can be exercised by a group.

There is no limit to the size of any one formal organization, since coordination can be expanded indefinitely. There need be no limit, then, to the relationships to be coordinated within the span of control. In fact, the greater efficiency of large organizations is explained in part by this phenomenon of informal groups.

Suojanen does stipulate that there is some "vaguely defined upper limit" to the informal group. If it is to be used to maintain good coordination and obviate the principle of span of control, then the number of individuals in the unit organization should also be limited. This appears to be somewhat in conflict with the previous assertion of limitless expansion of coordination. Also, how such effectiveness of numbers can be controlled is not explained. The theory appears to be an interesting approach to participative and democratic management.

In defense of attacks on the narrow span, Urwick points out that a span which is too wide can result in the same evils which are ascribed to the narrow span, namely poor communications and adverse morale, because subordinates may not have enough access to the boss. To make the

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[3] Waino W. Suojanen, "The Span of Control—Fact or Fable?" *Advanced Management*, November, 1955, p. 8

[4] Ibid., p. 9.

[5] *Ibid.*, pp. 12–13.

narrow span, with accompanying levels, work effectively both Urwick[6] and Davis[7] urge that informal contacts and cross relationships be encouraged among units. (Use of general staffs such as are found in the military is also prescribed). But, says Urwick, the span of control, not the number of levels, should be the determining factor.

Empirical Studies

The proponents of both the wide span and the narrow span can find substantiation in empirical studies. Dale[8] found that the span of control in large firms (over 5,000) ranged from 1-24, with the median between eight and nine. In medium-sized firms (500-5,000) the range was from 1-17, with the median between six and seven. The span, Dale concluded, tended in practice to exceed the limits judged as sound by earlier theory.

Healey[9] found that the chief executive in 445 firms employed a span of less than nine in 94 per cent of the cases, while the branch plant manager in 175 branches uses a span of less than nine in 84 per cent of the cases. This study also confirmed the fact that a higher span existed in the large firms, but chiefly for two reasons: (1) as a growing company adds subsidiaries, each of these is represented on the second echelon under the president, and (2) a larger number of staff specialists in large firms increase the number of executives reporting to the chief executive.

Another finding of the Healey study was the executives' opinions about the span of control do not always coincide with the span in use by them. Those with spans higher than eight were inclined to advocate a span smaller than that which they actually used.[10] This may bolster the arguments of the proponents of a low span, especially since those executives with lower spans indicated satisfaction with their number of subordinates.

What then is the solution to the problem? In some cases, of course, the span is automatically limited by the number of similarly important functions which belong on the same level. More research might profitably be done. Should a new kind of organiztaion structure be developed? Until now no sound alternatives have been advanced. The factors which determine the span are given in most management texts. Or we can simply say that the weighing of advantages of a wider span against the disadvantages (additional revenue vs. additional costs) [11] may determine the proper span, but for any one specific case, these guides are of limited help.

If it is true that the job of management is becoming more and more complex, and residual duties of a manager are increasing, then it appears that the limited span is not yet out of style. In 1957 an American Management Association survey revealed that 70 per cent of the companies had an "assistant to" the president, and that in most cases the position had been added within the preceding five years. A study of the various duties of an "assistant to" suggests that in many cases the position could be a response to the executives' need better to control the areas under their span. Certainly the "assistant to" often wields considerable influence, even in policy matters.

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[6] Lyndall F. Urwick, "The Manager's Span of Control," *Harvard Business Review*, May–June, 1956, pp. 39–47.

[7] Davis, *op. cit.*, pp. 226–231.

[8] Ernest Dale, *Planning and Developing the Company Organization Structure*, Research Report No. 20 (New York: American Management Association, 1952) pp. 56–59.

[9] James H. Healey, *Executive Coordination and Control* (Columbus, Ohio: The Ohio State University, Bureau of Business Research, 1956) Chapter IV.

[10] *Ibid.*, p. 245.

[11] Dale, *op. cit.*, p. 60.

Another development in organization relationships appears to be that of dividing the functions of the chief executive between the president and the chairman of the board. Is it possible that this development too is a reflection on the number of complex activities for which coordination has had to be exercised by the president? Some research on this development is being done currently, thus no conclusions are intended here. But in the light of what has been said above and the constant complaints of executives that their job accompanies them home in a briefcase, perhaps it would be advisable to take a long look at the narrow span before abandoning it, and at the same time to review the extent to which effective delegation is practiced.

Reappraisal of Decentralization

The pattern of decentralization of business firms since World War II is of course quite common knowledge. Neither is it a trend which has run its course, for there are many firms still in the process of decentralizing. Some changes in organizational structure have taken place, however, as a result of a re-evaluation of the effectiveness of decentralized activities, and also as a result of new developments in functions and techniques.

Decentralization is here used to mean the delegation of managerial functions, rather than geographical decentralization.

Reasons for Decentralization

Reasons for decentralization after World War II are numerous. A dispersion of business locations made it advisable to delegate authority to make decisions at the point of branch operations. When more executives participated in the management function, they were expected to be motivated to a greater degree and to contribute to good management teamwork. Management development could be more effective because managers would learn by doing. Decentralization was also the answer to communication difficulties arising from widely dispersed company units, intermittent contacts, lack of sufficient information for centralized decision-making, long chain of command, diversified operations, and similar characterstics of complex growth firms. Emphasis on a permissive climate for personnel effectiveness also encouraged downward delegation. Decentralization, in summary, was intended to minimize the effect of management as the first major limiting factor in growth of an enterprise.

Problems with Over-Decentralization

Time, information technology, and specific economic factors such as the recession of 1958 have brought about some adjustment in the thinking about the propriety of decentralization. Instead of continuing to experience growth and efficiency in a good organizational climate for progress, some firms found themselves with plenty of delegated authority and responsibility, but with a rapidly diminishing share of the market. There has, in consequence, been a growing conviction that a balancing centralization of some managerial functions must take place.

Under decentralization, considerable waste was frequently incurred because of lack of control standards in autonomous units. Objectives were left to be worked out by the division managers. In other cases, decentralization resulted in needless duplication of process and products in divisions of the firm. Or products were being manufactured which did not fit in with the product lines or distribution channels utilized, making the necessary organizational adjustments would have been risky and costly. While

decentralization was resorted to ten years ago because there were no known practical alternatives, there now appear to be some. Formerly the chief executive simply could not keep up with all the activities of division. Now he often can.

Conditions for Centralization

Whether the soaring sixties will see a new high in prosperity or an increased struggle merely to hold their own, firms are coping with the increased problems of competition and growth by developing new staff groups at the top management level. These units specialize in such functions as long-range planning. product planning and research, organizational analysis and planning, public relations and similar activities. The work of these staff units in planning and gathering information portends a greater centralization of planning and control activities at the top levels. If plans and control procedures are relocated at the top of the organization, inroads into the delegated management of the lower line manager can be a consequence. Even where decentralization is subscribed to nominally, an overly critical central staff may write up procedures to prevent occurrence of mistakes. The effect of these may be to give the lower line manager less authority than he had before. In at least one company, a top executive frankly admitted that, while division managers had full responsibility for profit figures, they did not have all the authority.[12]

It is not uncommon for a staff group's findings to assume the strength of line pronouncements. An operations research team may operate in a staff capacity, but when its conclusions concerning what are proper inventory levels or product mix are regarded as decisions sanctioned by top management, the decentralized manager is again curtailed in his own decision-making.

Another development which has begun to effect changes toward greater centralization is the advance in information-handling techniques. With data processing equipment capable of assembling and organizing masses of data needed for decisions, the need of several years ago for delegating major decision-making can now be lessened by centralized decision-making. There is even the belief expressed by some that within the next ten to twenty years the information-handling devices now rapidly being applied will be assuming many of the routine decision-making processes now exercised by lower level managers. Even more dramatic is the prediction that communications and decision processes will be so far developed that some middle and lower levels in the organization will be outmoded.[13]

Whether this condition will come to pass remains to be seen. If it does, centralized decisions will probably be the pattern. Will the administrative and social distance be decreased thereby? The number of levels in the firm will be decreased, but will there be a setting for effective operation of the principle of participation? Human relations can hardly be centralized along with centralized decision-making.

Organizational Planning Units

In a period when rapid change is normal, companies have been forced to take steps to assure for their organizations such basic qualities as sta-

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[12] "Countertrend to Decentralization—Top Management Tightens Conrols," *Dun's Review and Modern Industry*, July, 1959, p. 32.

[13] Harold J. Leavitt and Thomas L. Whisler, "Management in the 1980's", *Harvard Business Review*, November–December, 1958, pp. 41–48.

bility, flexibility, functional balance, growth capacity, and other requirements. Some new staff units have become visible in a number of large firms. One staff unit appears to come in two varieties. One type addresses itself specifically to the development and maintenance of an effective structure of functional relationships and procedures, and of the personnel within it. The other expands its activities to include not only the work of the first type but exercises staff leadership in coordinating such activities as product planning, market and industry analysis, new product evaluation, or special projects. In the words of one executive concerning this organizational unit in his firm: "Our concept of organizational planning includes the integration and coordination of all aspects of planning, rather than being limited to the delineation of the organization structure and its attendant duties and responsibilities."[14]

One of the earlier organizational units of this nature was the Control section of the Koppers Company, Incorporated. This Control section embraced several areas: organization and management, planning and policies, systems and procedures, and reports and analyses.[15] The unit may be located only at the corporate level, or it may be at the corporate level with a parallel unit at the division level. At the top level it usually reports to the president, at the division level to the division manager.

A staff department of the type which is more restricted in scope addresses itself chiefly to the development and maintenance of an effective structure of functional relationships and procedures, and of the personnel within it. Analysis and evaluation of such functional relationships and procedures usually begins with development and study of job descriptions which define organizational authority and responsibility of management personnel. This in turn shows whether corporate responsibilities are fully covered or whether reallocation of responsibilities is indicated. Duplication of activities is detected. Job descriptions are up-dated as duties are changed or additional tasks added. All organizational changes are reviewed and concurred with. In one company a current project of the unit is the elimination of all "assistant to" positions, since they reflected, apparently, an inadequate provision of regular staff services and definition of responsibilities.

Analysis of needs and planning for the staffing of managerial personnel necessary now and in the future is done. This may include executive personnel functions such as selection and replacement, compensation, appraisal and development.

Statements of policy and procedures are written, and manuals for their recording and dissemination are completed. Organization, policy and procedural audits are made also.

The staff may be expected to develop an organization plan for a long-range period of ten or twenty years, for example, including implementation, estimates of costs, and dates of completion. The above duties obviously require close relationships with all other functions in order to adapt the organization structure and procedure to fit the needs of both the present and the future.

When the staff unit activities cover a broader range, it coordinates the development of plans by bringing together projections and programs

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[14] Paul DePace, "Organization Planning: A Coordinated Approach to Product Development," *Planning Ahead for Profits*, American Management Association, Research and Development Division, Management Report No. 3, 1959, p. 70.

[15] Thomas J. McGinnis, *The Control Section as an Aid to Management*, (Pittsburgh, Pennsylvania: Koppers Company, Inc., undated).

of various company units. Plans from all units are procured covering areas such as sales, costs and expenses, inventories, profits, or services to be engaged in. Long-range plans and short-range plans may be included. A broad program for the firm is developed, with objectives set for each division and for the company as a whole. Measures of performance can be developed for checking progress. The entire program can then be submitted to top management for approval.

Does the organizational planning unit duplicate the work of the other units? In most cases it assumes for itself duplicate activities that have not been done before, or have not been done adequately by other units. It represents a stage in the development of a staff function, having become a separated and elevated staff unit.

Comments on a Proposed Concept of Control

The accent on behavioral science research has been accompanied by some criticisms of established control theory as well as some suggestions designed to provide new approaches to bringing about effective organizational behavior. It is impossible, of course, to discuss here all the sources dealing with such criticisms and new approaches. It may be helpful, however, to contrast in some way one of the recently expressed points of view with older "traditional" concepts. For this purpose the views selected are those of Douglas McGregor in his recent book *The Human Side of Enterprise*.[16] It is not necessarily the same as other newer approaches, but is sufficiently similar to be considered representative. Furthermore, it takes issue rather clearly with "traditional" concepts of control. Finally, it is in many ways an excellent book. But there remains a real question whether the criticism of older control theory expressed therein is very firmly based, and whether control concepts held forth as revolutionary substitutes are really so new.

McGregor takes issue with the management of personnel based upon established principles of direction and control because, he says, it is based upon the following assumptions:

1. The average person inherently dislikes work, and avoids it.
2. He must be coerced, controlled, directed and threatened to work toward organizational objectives.
3. He wants to be directed, avoids responsibility, has little ambition and limited capacity, and desires security above all.[17]

Therefore management tends to set up direction and control devices accordingly and treats men as less than intelligent adults.

Even our motivation efforts are based on an erroneous understanding of the employees' needs. We employ devices such as decentralization, management by objectives, or consultative supervision but these are inadequate because the procedures used to implement them are based on unsound assumptions about people. Our programs aim to fill basic physiological needs — physical security and well-being, hunger satisfaction, etc., which are usually already filled — but they give the individual little opportunity to fill higher sociological and egoistic needs. When employees fail to respond to our motivational efforts, we exercise formal authority and control to make them respond.[18] Human beings, however, possess the capacity to render largely ineffective any form of external

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[16] Douglas McGregor, *The Human Side of Enterprise* (New York: McGraw-Hill Book Company, 1960).

[17] *Ibid.*, pp. 33–34.

[18] *Ibid.*, p. 42.

control. But they will, under appropriate conditions, exercise *self-direction* and *self control* to attain objectives to which they voluntarily subscribe.

For the "traditional" control techniques would be substituted an approach which is based on an integration of individual and organizational objectives. The assumptions underlying it are, in summary, these:

1. Work is as natural as play or rest.
2. Conventional control and threats are not the only means of attaining objectives. People will exercise self-direction and self-control if they believe in the goals. Their motivation is a function of the rewards that go with such achievement.
3. Commitment to objectives is related to rewards associated with achievement of such objectives.
4. The average person will, under proper conditions, learn to seek responsibility.
5. Qualities of imagination, ingenuity, and creativity in solving organization problems are widely, not narrowly, distributed in the population.
6. The intellectual potential of the average person is only partially realized in the current industrial environment.[19]

Effectiveness is achieved by creating an environment in which employees can achieve their own goals best by directing their efforts toward the success of the enterprise. Getting employees to understand requirements and enrolling their willing participation are means of achieving integration. This is accomplished, according to McGregor, not by procedures or policy or even the personal behavior of the manager, but "by the manager's subtle and quite unconscious manifestations of his underlying conception of management and his assumptions about people in general."[20] The manager relinquishes control in the conventional sense. It is apparently felt that the process of direction and control cannot be employed at the same time that integration of objectives is pursued, and that the two are far apart because of the differences in basic assumptions underlying their use.

The chief fallacy in the above is in the basic premise of the reasoning. The earlier approach to mangement does not make the assumptions with which it is charged. The traditional approach does not advocate motivation of subordinates only through formal authority. If the earlier literature appeared to be concerned mainly with formal aspects, it should not be inferred that there was no recognition of the human element. An integration of personal and organizational objectives is a basic requirement recognized in management writing for years.[21] The basic structure of management theory is still sound. The many contributions being made by the behavorial sciences are exceedingly valuable. They give vital assistance in how to apply good management; but they do not invalidate present theory. McGregor himself defends formal authority as a necessary tool of the manager.[22]

It is submitted that this aspect of a new approach to control is not new at all. It would be subscribed to by any manager who has

[19] *Ibid*, pp. 47–48.

[20] *Ibid.*, p. 141.

[21] See, for example, Ralph C. Davis, *Industrial Organization and Management* (New York: Harper and Brothers, 1940).

[22] McGregor, *op. cit.*, p. 29 and p. 56

built up a mutual confidence relationship with his employees. A superficial application of either the techniques of direction and control *or* the principle of integration of objectives will have disappointing results.

Another criticism is in the use of staff services for control purposes. Traditional concepts of authority and responsibility in the organization are criticized, as well as is the role of staff as a tool for control. Reference is made to the apparent phenomenon of the industrial organization being run by staff. The trend toward greater reliance on specialized staff groups to solve complex problems of the firm has had as a consequence the tendency to put line functions in an increasingly dependent relationship with these staff units. Staff, because of the complexity of their work, and because of top management delegating to them control and coordinating responsibilities, becomes the "dominant, influential core of the organization."[23] There is some support for this contention, as was observed in the comments on centralization. When staff is put in the role of a control mechanism for top management, there is the danger of its assuming line authority, and line then has difficulty in wielding a degree of authority equal to its responsibility.

McGregor contends that equality of authority and responsibility is neither possible nor necessary. Line and staff are interdependent. Line should not exercise authority over staff, neither should staff exercise authority over line, it is held.[24] Here the stand taken may be due to a misunderstanding of line and staff authority relationships. It appears that staff is implied to be subordinate to line and takes its orders from the line throughout the organization. A separate staff department does not take orders from the line, however; it may be accountable through a separate chain of command to a common superior.

In the suggested theory of control, the role of staff should be that of providing professional help to all levels of management, and doing so directly, not through the chain of command of any department or division. Furthermore, the kind of help requested and administered is to be determined by the recipient unit, not by the staff itself. Help is as it is defined or perceived by the receiver.

Staff should provide help for "self control" only. That is, it should not be asked to provide a line manager, for example, with information to be used for control of lower line units, except to supply data on ultimate or end results. While this is posed as a theoretical requirement for which certain adjustments must be made, nevertheless the general guide is as stated. Thus staff help should consist in informing a manager when performance deviates from standard, but with the full understanding by both the staff and the manager concerned that the staff will not report such information to *anyone else*.[25] To do so would be placing the staff in the role of policing the organization, which brings about the condition of staff increasingly running the organization, an evil of traditional control theory.

McGregor admits that his theory of self-control would not be practical on the operative level of the industrial organization for some years to come, but that it could be applied now in the management of many firms.

The role prescribed for staff is not so dissimilar from good management theory in any organization. The professional attitude of staff toward

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[23] *Ibid.*, pp. 54–55.
[24] *Ibid.*, p. 158 ff.
[25] *Ibid.*, p. 169.

assistance to other units is to be applauded. Whether, however, staff should be allowed to withhold information from a line manager about the progress or difficulty of a subordinate unit under him is indeed questionable. Certainly the line manager might be put in an untenable position of accountability without authority to fulfill it.

On closer examination, what is alleged to be a revolutionary concept of control for organizational effectiveness is really not. With some exceptions, it is a very helpful development of concepts for exercising positive motivation within the frame work of sound established theory.

It is not contended that changes will not be made in basic theory. There may well be. But for the present there is needed a thorough understanding of basic management theory and a greater integration of human relations concepts with present theory, rather than a replacement of that theory.

In the preceding discussion comments were made relative to current thinking on selected management topics: span of control, decentralization, organization planning units, and control. A thorough discussion was not possible within the limits of time provided, but it is hoped that the comments will furnish the basis for further consideration and discussion.

Two Approaches to Computer Simulation

KALMAN J. COHEN
Graduate School of Industrial Administration
Carnegie Institute of Technology
Pittsburgh, Pennsylvania

The two approaches to computer simulation which are discussed in this paper are called "synthesis" and "analysis." Synthesis and analysis differ in that they are designed to answer different types of questions and they require different classes of empirical information. As a preliminary to the discussion of these two approaches, we shall first define the terms "simulation" and "computer models".

Simulation

Simulation is a technique for studying the behavior of complex systems. The usefulness of this technique has been widely demonstrated in increasing our understanding of a wide range of phenomena from such fields as economics, psychology, business and industry, engineering, physics, chemistry, and military strategy, tactics, and logistics.

In exploring the behavior of complex systems, scientists and engineers frequently utilize intellectual constructs known as "models." A formal model of a complex system is an abstract representation of the real system, defined or characterized by a set of explicitly stated assumptions. Since any model is necessarily a simplification of the real system to which it corresponds, to prevent the model from being "over-simplified," it is useful to specify in advance the types of applications for which the model is intended, thus indicating the areas where considerable amounts of realistic detail are required.

A simulation model is one particular kind of formal model. The explicit assumptions which characterize a simulation model describe the dynamic processes determining the behavior of the complex system being studied. To simulate a complex system, we first formulate a simulation model of the system, and then we sequentially carry out the dynamic processes which are specified by the explicit assumptions of the model. If the simulation model is properly formulated, relative to the types of questions it is intended to answer, then simulation can provide a considerable amount of useful information about the corresponding real system.

There are a variety of mechanisms which can be used in constructing simulation models. They can be classified under three broad headings: physical simulation models, analog simulation models, and mathematical simulation models.

Physical simulation models are scaled reproductions of the corresponding system. Since physical simulation models usually portray reality on a greatly reduced scale, they can also be thought of as miniaturized reconstruction of complex systems. Some examples of physical simulation models are scale model airplanes in wind tunnels, scale model ships in flood basins, military maneuvers, and pilot production plants. While there are some types of applications for which physical simulation models are extremely useful, such models are in general more expensive to con-

struct and more awkward to manipulate than analog or mathematical simulation models.

Both analog and physical simulation models are endowed with an air of concreteness, since they are fabricated from such components as human beings and hardware items. However, these two types of simulation models differ considerably in the manner by which they portray reality. Rather than trying to be a conveniently scaled copy of a complex system, an analog simulation model is intended to be merely an analogy of the corresponding system. Webster defines "analogy" as "a relation of likeness, between two things or *of* one thing *to* or *with* another, consisting in the resemblence not of the things themselves but of two or more attributes, circumstances, or effects."[1] While the actual appearance of an analog simulation model is usually very different from that of the corresponding complex system, the components comprising the analog simulation model are interconnected in ways which are analogous to the interrelations among the corresponding components in the real system. Some examples of analog simulation models are in electronic analog of an oil pipeline network, a hydraulic analog of the circular flow of money in an economic system, and a mechanical analog of a production and distribution system.

In contrast to the concreteness of both physical and analog simulation models, mathematical simulation models are composed entirely of abstract symbols. In a mathematical simulation model, a set of mathematical relations is used to characterize the dynamic processes present in the real dynamic system. In simulating a mathematical model, computational procedures are used to trace numerically the implications of these mathematical relations. Various kinds of calculating devices can be used in simulating a mathematical model. For very simple models, a human using only a pencil and paper might be adequate. As the models become more complex, a human simulating the model might find it advantageous to use some mechanical computational aids such as a desk calculator, adding machine, slide rule, or table of logarithms. Most of the interesting mathematical simulation models which have been formulated are so complex that they call for the use of an electronic computer, of either the analog or the digital type. However, no matter what type of computer is used to simulate a mathematical model, its function is simply that of carrying out in numerical terms the dynamic processes embodied in the formal assumptions of the model.

Computer Models

The term "computer model" is used to refer to a mathematical model which is intended to be simulated on an electronic digital computer. Computer models are the most widely used and versatile type of simulation model. The potential applicability of computer models is limitless, for any mathematical model, no matter how large and how complex, can in principle be simulated by an appropriate electronic digital computer. However, in practice economic considerations limit the comprehensiveness of computer models, since even the largest and fastest electronic computer has neither infinite storage capacity nor infinitesimal operating speeds, and the costs of computer time are often substantial. To a greater extent than is true of other types of simulation models, computer models have demonstrated their usefulness for studying the behavior of complex

[1] *Webster's New Collegiate Dictionary*, Springfield, Massachusetts: G. and C. Merriam Co., 1956, p. 32.

systems in such diverse areas as the physical science, the social sciences, engineering, management, and the military.

The greatest single advantage of computer models in comparison with other types of either simulation or non-simulation models is the relative ease with which considerable amounts of realism, together with the concomitant complexity, can be embodied in the models. While adding complexity will always increase the expense and difficulty of deriving the implications of a computer model, in principle it is always possible (if not necessarily practical) to simulate a computer model, no matter how complex it might be. In contrast, adding complexity to non-computer models will not only increase the expense and difficulty of deriving the implications of the model, but it will often lead to models which even in principle cannot be made to yield any conclusions.

In comparison with other types of simulation models, computer models possess four additional advantages. First, because modern electronic digital computers operate at extremely high speeds, it is usually much faster to derive interesting consequences from computer models than from other types of simulation models. Second, because of the great accuracy of electronic digital computers, it is not very likely that arithmetical or other simple errors will occur and cause erroneous inferences to be drawn from the model. Third, the results of a computer model are completely reproducible. If the same computer program is run several times using the same input data, exactly the same output will be produced every time. Finally, a computer model can more easily assume a modular character than can other types of simulation models. It is extremely convenient to be able to formulate a complex model in terms of several conponent submodels, to deal with each component separately at first, and then to integrate them into a complete model.

In comparing computer models with conventional mathematical models, it is necessary to consider the extent to which the different models describe the corresponding real system. If a direct mathematical solution can be obtained for a formal mathematical model, considerably more information about the behavior of the corresponding system is thereby obtained than would be provided by using simulation procedures on the same model. Furthermore, it is usually less expensive to solve a model mathematically whenever it is possible than to trace its solution numerically through simulation techniques. However, it is often the case that a direct mathematical solution cannot be obtained for a computer model. In this situation, the researcher must decide whether it is better to utilize computer simulation techniques to obtain "less general" and "more expensive" results for a complex, realistic, and meaningful model or else to simplify the model until it can be solved mathematically, thus obtaining "more general" and "less expensive" results for a simple, unrealistic, and possibly inapplicable model. Increasingly, the practical answer to this strategic question is turning out to favor computer simulation models, because of the extremely large amounts of relevant and realistic detail which can be incorporated in them. The trend towards the use of computer models should accelerate as researchers gain more experience and greater ability in working effectively with them, and as electronic digital computers become larger, faster, and less expensive.

Synthesis and Analysis

Now that we have discussed the general concept of simulation and the importance of electronic computers in current simulation studies, we

are ready to consider the two different approaches which can be taken in using computer models to explore the behavior of complex systems. In another paper,[2] we have applied the labels "analysis" and "synthesis" to these two approaches. This usage is suggested by the primary definitions of these terms given by Webster: "analysis" is "separation of anything into constituent parts or elements; also an examination of anything to distinguish its component parts or elements, separately or in their relation to the whole";[3] "synthesis" is "composition or combination of parts, elements, etc., so as to form a whole; also, the whole thus formed."[4] The basis for the distinction between analysis and synthesis rests upon the types of fundamental questions the researcher is trying to answer and the kinds of empirical knowledge he possesses.

Most operations research simulation studies have used computers as tools of synthesis. In a computer model intended for synthesis, all of the individual structural relations are assumed known to a high degree of accuracy. However, what is not known is how the component relations will interact as a complete system.[5] In this situation, the question in which the researcher is primarily interested is what will be the behavior of the overall system? Although the entire system response is determined once the characteristics of all the structural relations have been specified, in practice the forms of the underlying relations are frequently so complex and the number of variables contained in them is frequently so large that no mathematical techniques are known which will enable us to derive the overall system behavior as a set of closed mathematical formulas. When this is the case, the operating characteristics of all the components of the system can be represented by a computer program, and an electronic computer can be used to simulate the behavior of the overall system. The output from the computer is then assumed to correspond to the time paths which would be traced by the real system.

When computer simulation is used as a tool of analysis, the situation is almost exactly the opposite of that pictured above. The overall behavior of the system is observable and known, but the characteristics of the individual components comprising the system are not completely understood.[6] In this situation, the researcher is interested in discovering the structural relations which underlie the system. One way of testing whether he has is to try to formulate a model specifying the actions of each individual component, and then to manipulate the model to see whether the resulting system corresponds to observed behavior. If the forms of the separate equations of the model are reasonably simple and if the number of individual variables involved is reasonably small, then traditional mathematical methods may suffice for this purpose. Frequently,

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[2] Kalman J. Cohen and Richard M. Cyert, "Computer Models in Dynamic Economics," *The Quarterly Journal of Economics*, Vol. 75, No. 1 (February, 1961), forthcoming.

[3] *Webster's New Collegiate Dictionary*, op. cit., p. 32.

[4] *Ibid.*, p. 862.

[5] The complete system may in fact have never been observed, and the researcher may even hope that it never will be, as, for example, when the model represents an air battle between two Great Powers. In this connection, see R. H. Adams and J. L. Jenkins, "Simulations of Air Operations with the Air Battle Model," (abstract), *Bulletin of the Operations Research Society of America*, Vol. 7, Supplement 2, (1959) pp. B-96f.

[6] This is frequently the case in economics. For a specific example, see Kalman J. Cohen, *Computer Models of the Shoe, Leather, Hide Sequence*, Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1960.

however, it will be impossible to derive a set of closed mathematical formulas which embody the consequences of the model, but when this is the case, it is always possible to use computer simulation as a technique for manipulating the formal model.

In summary, when computer models are used for purposes of synthesis, it is assumed that we satisfactorily know the individual behavior of the underlying components of a complex system, and that our primary interest is in discovering the unknown behavior of the complete system. When computer models are used for purposes of analysis, on the other hand, it is assumed that we satisfactorily know the overall behavior of the complete system, and that we are mainly interested in inferring the unknown behavior of the individual parts of the system.

The use of computer models for synthesis is an example of pure deductive logic. The operating characteristics of the individual components are essentially the postulates of a formal deductive system, the programmed interactions of the components with each other are the rules of inference, and the overall patterns of behavior traced by the complete system are the derived theorems. In any formal deductive system, once we agree that the postulates and the rules of inference are empirically true, we necessarily agree to accept all theorems derived from them as also being empirically true. Hence, when a computer model is used as a tool of synthesis, the problem of empirical validation of the model should primarily be focused on the level of the detailed actions and interactions of the individual components.

The use of computer models for analysis is an example of pure inductive logic, i.e., of empirical inference. Although the underlying operating characteristics of the system's components are tentatively treated as postulates, the fundamental interactions of the components as rules of inference, and the overall system behavior as theorems of a formal deductive system, empirical testing is carried out at the level of the theorems, i.e., with regard to the behavior of the complete system. If the overall system behavior is in fact found to be in serious disagreement with the "theorems" derived from the model, we then must infer that the formal model is in some way an inadequate representation of the world. However, when the time paths generated by the computer model correspond closely to the observed behavior of the complete system, then the underlying model must be regarded as confirmed by the available evidence.[7]

In practice, some computer simulation studies seem to be blends of both the synthesis and the analysis approaches.[8] This will occur most frequently when we have fragmentary but incomplete empirical knowledge of both the complete system and its individual parts. In this circumstance, the researcher can obtain the greatest benefit from computer models if

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[7] Strictly speaking, it would be more accurate to say "not refuted" than "confirmed"in this case, for it is always possible that more than one mdoel could be found which would yield the same complete system behavior. This problem is not unique to the use of computer simulation as a tool of analysis, but it essentially arises in all empirical sciences. For a general philosophical discussion of this problem, see Bertrand Russell, *Human Knowledge: Its Scope and Limits,* New York: Simon and Schuster, 1948, pp. 421–507.

[8] For example, see Jay W. Forrester, "Industrial Dynamics—A Major Breakthrough for Decision Makers," *Harvard Business Review,* Vol. 36, No. 4 (July–August, 1958), pp. 37–66; Alan J. Rowe, "A Research Approach in Management Controls," *Management Control Systems,* Donald G. Malcolm, Alan J. Rowe, and Lorimer F. McConnell, eds., New York: John Wiley and Sons, Inc., 1960, pp. 273–299; and Joel M. Kibbee, "Management Control Simulation," *ibid.,* pp. 300–320.

he goes through an iterative process of alternately using simulation as a tool of analysis and as a procedure for synthesis, obtaining successive refinements in his knowledge of the behavior of the underlying components and the overall system at each stage.

It is useful to draw a sharp distinction between analysis and synthesis, the two approaches to computer simulation, in order to establish the criteria whereby some important methodological questions can be answered. A conscientious researcher, in trying to exploit the full potential which computer simulation techniques can offer in studying the behavior of complex systems, must find answers to such questions as how should the functional forms in a computer model be specified, how should the parameters of a computer model be estimated, and how should a computer model be validated? The manner in which these questions should be answered will differ depending on whether the computer model is being used for purposes of analysis or of synthesis.[9] These methodological problems are relatively more important when computer simulation is used as a tool of analysis than when it is used as a technique for synthesis. Even in the latter case, however, they are probably worthy of more explicit consideration than has usually been accorded them by researchers. It is all too easy to assume that we in fact adequately know the individual behavior of the components in particular systems. Even though this may be true at a gross level, overlooking some of the more subtle interactions of the individual components can introduce serious errors into the resulting overall system behavior. For example, when the individual structural equations of the model contain stochastic terms, we might correctly identify the marginal distributions from which each random element is drawn, and yet go seriously astray by incorrectly assuming that these stochastic terms are independently distributed and non-serially correlated. Even though computer simulation is used strictly for purposes of synthesis, it is prudent to check our assumed knowledge of the individual components' behavior by trying empirically to validate the overall system behavior for at least one case.[10]

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[9] For a discussion of the methodological problems which arise from the use of computer models as a tool of analysis, see Cohen and Cyert, *op. cit.* In contrast, considerations of the methodological problems present when computer models are used for purposes of synthesis are presented in R. W. Conway, B. M. Johnson, and W. L. Maxwell, "Some Problems of Digital Systems Simulation," *Management Science*, Vol. 6. No. 1 (October, 1959); and in John W. Wester, Jr., "Experience in Complex Simulation," (abstract), *Bulletin of the Operations Research Society of America*, Vol. 7, Supplement 2, (1959), pp. B–95f.

[10] One example where such an attempt was made is Hebron E. Adams and Richard E. Forrester, "Cormonette: A Computer Combat Simulation," (abstract), *Bulletin of the Operations Research Society of America*, Vol. 7, Supplement 2 (1959), pp. B–98f.

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The Academy of Management

Reports of Officers and Committees for the Year 1960

MINUTES OF THE ANNUAL MEETING

December 28, 1960

The 1960 business meeting of the Academy of Management was called to order at 4:40 p.m. on December 28 by President Joseph W. Towle in Louderman Hall, Washington University, St. Louis, Missouri. The minutes of the 1959 meeting were approved and accepted as published in the 1959 Academy Proceedings.

Professor D. E. McFarland gave the report of the Secretary-treasurer. This report is in the appendix to these minutes. In addition, the financial report for the Academy's operations during 1960 is appended to these minutes. The Secretary-treasurer reported that instructions to advance the annual billing date to April 1 were carried out, and that a very large proportion of current and back dues had been collected. Accordingly, the Academy finds itself in a more favorable financial condition.

Professor Max D. Richards, chairman, presented the report of the Membership Committee. During 1960, the membership increased by 54, reaching a total of 389. The report is appended to these minutes.

Thomas Luck reported the activities of the Public Relations Committee. The committee presented the details for a Distinquished Management Award to be established by the Academy for excellence in contributing to the field of management. After discussion it was moved by Professor Mandeville and seconded by Professor Davis that the report of the Public Relations Committee be accepted and that the proposed award and award procedures be established by the Academy. The motion was further discussed and passed. The report of the Public Relations Committee is appended to these minutes.

Professor Terry gave the report of the Program Committee. He thanked the participants and stated that he would write each an official letter of thanks and appreciation. A motion was made by Mr. Alvin Brown to thank Professor George Terry for the excellent program for the annual meeting. The motion was seconded and passed.

Professor LeBreton presented the report of the Research and Publications Committee. He first discussed the operation of the *Journal of the Academy of Management*, presenting a list of suggestions for the consideration of the editorial staff of the *Journal*. Professor LeBreton further reported on the progress of the cooperative research grant arrangements in which the Academy is paticipating with the American Management Association. The Research and Publications Committee is discussing plans for continuing and implementing this and other research programs, and is planning to disseminate various kinds of research information to Academy members. Professor LeBreton indicated that publicizing of the 1961 AMA-Academy

program would be undertaken earlier in order to allow more opportunity for proposals to be prepared and considered.

At the conclusion of Professor LeBreton's report, Professor Mee commended Professor Paul Dauten, Jr., for his work as Editor of the *Journal* and moved that an expression of the Academy's appreciation for Professor Dauten's work be entered in the official minutes. This motion was enthusiastically seconded and passed.

Professor Dauten presented a detailed report on the activities of the *Journal of the Academy of Management*. As a supplement to the report of the Research and Publications Committee, Professor Dauten outlined the details of the business operation and the editorial operation of the *Journal*.

Professor Harold Koontz gave an auditor's report for the Finance Committee. He reported that his audit of the Academy's books, and the books of the *Journal* showed both to be in proper order. He stated that the financial report distributed by the Secretary-treasurer and the financial report given by the Editor of the *Journal of the Academy of Management* both represented accounting on a cash basis and that, particularly in the case of the *Journal*, it would be desirable to institute an accural system. Professor Koontz also indicated that he thought it would be desirable for the Academy to transmit to the *Journal* an amount equal to the subscription price of $4 times the number of Academy members. He indicated that this would settle the question of how much of an allotment should be made to the *Journal* on a policy basis rather than a year-to-year basis. After some discussion, Professor Goetz moved that the members authorize the Board of Governors to grant annually to the *Journal* a sum up to the amount of the annual subscription price times the number of members. The motion was seconded and passed.

Professor D. E McFarland gave the report of the Nominating Committee for Professor Ralph C. Davis. The report is appended to these minutes.

Professor Harold Koontz reported on the status of the Western Chapter of the Academy of Management. He reported that last year's initial meeting was an outstanding success and that another annual meeting has been scheduled for April 14 and 15 at Monterey, California. Professor Koontz has been elected president of the Western Chapter for 1961.

Professor Joseph W. Towle gave his annual report, a copy of which is appended to these minutes. Professor Towle outlined the following important points: (1) the forthcoming International Management Congress to be held in New York City in October of 1963, (2) the problem of policies regarding other regional management groups that might desire to become chapters of the Academy, (3) the need for clarification of the method of appointing persons to the position of Editor of the *Journal*, and (4) the need to re-examine the qualifications for membership in the Academy.

President Towle called for new items of business. Professor William Voris presented the following amendment to the by-laws:

Article IV. Regional Division of the Academy

1. Regional divisions of the Academy of Management may be formed.

2. To establish a regional division, a minimum of 20 members of the academy representing a logical geagraphical area of not less than 5 states, shall petition the Board of Governors.

3. A majority vote of the Board of Governors shall be sufficient to establish a regional division.

4. Each regional division shall have a President, and such other officers as they may see fit.

5. The regional divisions are free to conduct whatever programs they claim to be fitting but to include an annual conference. This conference is not to be held at the time of the Academy of Management's annual meeting.

6. The regional divisions shall conform to the constitution, and the by-laws of the Academy of Management concerning objectives, membership, and all other matters.

(Proposed but later deleted)

7. The Western Division of the Academy of Management shall include the geographic region composed of California, Oregon, Washington, Idaho, Colorado, Utah, Nevada, Arizona, Wyoming, Montana, and New Mexico.

At the conclusion of his presentation of the above amendment, Professor Voris moved that the amendment be accepted. The motion was seconded and a detailed discussion followed. Professor Davis moved to amend the change in the by-laws to eliminate the reference of geographical areas under each region and to leave this matter to be determined by the Board of Governors. The motion as amended was passed.

Professor Keith Davis made a motion that the Board of Governors be instructed to consummate a membership in the Council for International Progress in Management (CIPM). After some discussion this motion was seconded and passed.

Professor William Fox moved to recommend to the officers and the Board of Governors the exploration of the possibilities for trusts and patrons whose contributions could help to eliminate both the Academy and university subsidies for the *Journal*. It was his opinion that if all Academy members worked to develop such assistance, donors could be found who would be willing to undertake this kind of support for the *Journal*. The motion was seconded and passed.

Respectfully submitted,
Dalton E. McFarland
Secretary-treasurer

ACADEMY OF MANAGEMENT

Comparative Financial Statement

Years Ending November 30, 1959 and 1960

RECEIPTS AND DISBURSEMENTS

BALANCE		$1,306.78		$1,019.78
	1959		**1960**	
RECEIPTS				
1956 Dues Collected	$ 25.00		$ 5.00	
1957 Dues Collected	75.00		10.00	
1958 Dues Collected	60.00		105.00	
1959 Dues Collected	1,015.00		515.00	
1960 Dues Collected	5.00		2,251.00	
1961 Dues Collected	—		29.00	
Interest	17.00		33.64	
Luncheon and Meeting Fees	371.00		112.00	
AMA Research Advance	500.00	2,068.00	500.00	3,560.64
TOTAL FUNDS AVAILABLE		$3,374.78		$4,580.42
DISBURSEMENTS				
Annual Meeting	$ 305.21		$ 10.92	
Stamps and Envelopes	84.30		149.21	
Printing	45.50		133.73	
Clerical Expense	27.67		148.01	
Proceedings	319.31		314.25	
Journal Allotment	1,000.00		1,000.00	
Western Chapter Allotment	—		100.00	
Research Expense	463.00		160.04	
Board of Governors Election	53.40		—	
Journal Publicity	42.50		—	
Miscellaneous	14.11	2,355.00	20.05	2,036.21
BALANCE		$1,019.78		$2,432.21

BALANCE SHEET

Cash - Checking Account	$ 436.17		$2,049.42	
Savings Account	583.61	$1,019.78	617.25	$2,666.67
Receivables				
1956 Dues Receivable	$ 5.00		$ —	
1957 Dues Receivable	15.00		—	
1958 Dues Receivable	190.00		5.00	
1959 Dues Receivable	665.00		50.00	
1960 Dues Receivable	—	875.00	193.00	248.00
Total Assets		$1,894.78		$2,914.67

REPORT OF THE FINANCE COMMITTEE
December 28, 1960

Your Finance Committee has audited the Treasurer's records of The Academy of Management for the past fiscal year (with a closing of December 7, 1960) and has audited the complete financial records of the Editor of the *Journal of the Academy of Management* from the beginning until December 31, 1960. In both these items the Committee has made such examination of the books and such verification of accounts and bank statements as in its opinion were necessary under the circumstances. It finds that the books of both the Treasurer of the Academy of Management and the Editor of the *Journal* properly reflect *on a cash basis* the financial situation of these two operations.

In undertaking this audit, your Committee has noticed that in neither the Academy nor the *Journal* have there been any accruals of receivables or liabilities, both books having been kept on a cash basis. Although the data are available for taking into account such items as accured member dues receivable and unused subscriptions, the amount of accounting work required for doing this has not been regarded as justified by the results. Your Committee agrees with this conclusion for these operations up to this time and in noting this deficiency does not wish in any way to criticize the work of the Treasurer or the Editor since the work of each has been conscientious and thorough.

Your Committee notes also that the minutes of the Academy have carried no authorization for the Academy to allocate funds to the *Journal* even though the Treasurer has done so. Your Committee notes also that neither the Treasurer nor the Editor are bonded.

A further observation made by the Committee is that, even though the accounts of the *Journal* are kept on a cash basis, the liability for unused subscriptions is believed to be more than offset at this time by the receivables for unpaid subscriptions. Furthermore, an estimated balance sheet of the operations of the *Journal* indicates an increase in net worth, assuming the inventory of *Journals* at cost is a fair evaluation of this asset, of approximately $3,200 or an amount almost equal to the *total Journal* allotment made by the Academy for Journal subscriptions of its members during the life of this publication. The Committee regarded this an exceptionally successful situation, showing not only great skill and economy on the part of the Editor but also representing a tremendous amount of contributed time and service by the Editor, his wife, and the University of Illinois. The Committee was likewise impressed with the meticulous care and devotion which the Editor has shown in the development of the *Journal*.

Your Committee makes the following recommendtaions to the Academy:

1. That the members approve a more specific allocation of fees for the *Journal* and that the Board of Governors be given the power to determine this allocation annually up to a maximum of the regular subscription price of the *Journal* multiplied by the number of the members of the Academy.
2. That the Board of Governors and the Editor consider hiring a small amount of accounting assistance so that the basic records now available can be used in the future to construct an accurate annual income statement and balance sheet of the *Journal*.
3. That the Board of Governors in consultation with the Editor

review the financial condition of the *Journal* with a view to spending apparent "profits" for more assistance to the Editor and for improving the qualitative appearance of the *Journal*.

4. That the Board of Governors investigate the feasibility of and undertaking, if not too expensive, the bonding of the Treasurer and the Editor.

Respectfully submitted,
Harold Koontz, Chairman
Finance Committee

REPORT OF THE MEMBERSHIP COMMITTEE

December 28, 1960

The Membership Committee approved and sent to the President of the Academy sixty-five (65) new members up to December 14, 1960. At that time three applications were pending committee approval. The Secretary-treasurer accepted three (3) resignations and dropped twelve (12) members for non-payment of dues. The net addition of members amounts, therefore, to fifty (50) members during 1960. The Academy now has 387 members.

As suggested by the resolution of the Academy of Management during the December, 1959, Annual Meeting, the Membership Committee re-examined the qualifications for membership in the Academy. Different classes of members such as industrial, honorary, corporate, and associate classes were considered. Although there was some sentiment in the committee for liberalizing present rules, the consensus of the committee developed a recommendation to the President and Board of Governors that the objectives of the Academy could be served best by maintaining present membership regulations.

Presently, the first basic criterion for admission to the Academy, then, is full-time interest and teaching of management by persons with the rank of assistant professor or above in accredited academic instiutions. The second basic criterion is used for non-academic applications. These applicants are admitted if they have "contributed substantially in written form to the philosophy or theory of Management." Each such application is considered carefully and individually by all members of the committee.

During the year, the committee experienced much soul-searching in consideration of applications from corporate management, development directors, officers of management associations, part-time teachers, behaviorists, mathematicians, consultants, and others. At the present time, each such application is considered on an individual case basis utilizing the basic criteria above.

The committee wishes to extend their appreciation for the aid and encouragement of the officers of the Academy, especially from President Towle during the year. Similarly, the committee expresses its appreciation to Academy members who have encouraged highly qualified applicants to join us in furthering the philosophy and theory of management.

Respectfully submitted,
Judson Neff
Dick Roman
Stansburry Stockton
William Voris
Max D. Richards, Chairman

REPORT OF THE SECRETARY-TREASURER
December 28, 1960

During 1960, the Secretary-treasurer carried out the prescribed duties concerning the business affairs of the Academy. Approximately thirty inquires about the Academy and membership therein were responded to.

The Annual Proceedings of the 1959 meeting were edited, published and distributed to members, at a cost of approximately $.95 per copy.

The American Management Association again supported a collaborative research program with the Academy through its Research and Publications Committee. Brochures describing this program were mailed to members plus a selected mailing list of approximately 1,000 persons.

As instructed, the billing date for membership dues was moved to April 1, 1960, and the dues were increased to $7.00 annually. By careful follow-up, a large percentage of current and back dues was collected.

The Academy transmitted $1,000.00 to Professor Paul Dauten, Jr. to defray part of the costs of publishing the *Journal*. The sum of $100.00 was transmitted to Professor Keith Davis to assist in starting the new Western Chapter.

The Annual Meeting Programs, election ballots, a copy of the Constitution and By-laws and several announcements were mailed to all members on November 15. Professor George Terry was elected President of the Academy. Mr. Harold Smiddy was elected Vice-President, and Professor Keith Davis was elected Secretary-treasurer, for 1961.

A comparative financial statement for 1959 and 1960 is included with this report. This statement constitutes the Treasurer's report, and itemizes in detail the receipt and expenditure of the general funds of the Academy.

Respectfully submitted,
Dalton E. McFarland

REPORT OF THE RESEARCH AND PUBLICATIONS COMMITTEE
December 28, 1960

The Committee met on December 27 in the Pius XII Memorial Library, St. Louis, Missouri, and December 28 at Washington University. Members in attendance were Preston P. Le Breton, Lee E. Danielson, Dale A. Henning, Stanley J. Seimer, Charles E. Summer, Dalton E. McFarland and Paul M. Dauten, Jr. The Committee arrived at the following decisions:

Publication Activities

1. To maintain the size of the Research and Publications Committee which approximates ten members and to divide the members into three major sub-areas of management which are General Management, Organization and Policy; Personnel, Human Relations, and Industrial Relations; and Production and Operations Research.
2. To invite Professor Robert B. Fetter of the Department of Industrial Administration, Yale University, to serve as a member of the Committee. Professor Fetter has been invited and has accepted our offer.
3. To recommend to the new Editor, Dalton E. McFarland of Michigan State University, that he give serious consideration to the following items pertaining to the *Journal of the Academy of Management.*

a. That the level and style of articles to be included in the *Journal* be comparable to those currently appearing in such publications as *Administrative Science Quarterly* and *Management Science*. That increased emphasis be placed upon articles which result from research findings.

b. That the general format and departmentation of the *Journal* reflect the following ideas:

(1) No job market department.

(2) Include summaries or abstracts of outstanding theses.

(3) No special supplements considered for 1961.

(4) Write-up of outstanding figures, if included at all, be done on a judicious basis. These write-ups should not appear as a regular feature of the *Journal*.

(5) The continuation of the section entitled "Management in Perspective" which would serve the dual purpose now performed by the typical letters to the editor section of magazines and the "Looking Around" and Ahead" sections of the *Harvard Business Review*.

4. The Committee recommended that the Academy of Management give special recognition to our outgoing Editor, Paul M. Dauten Jr. of the University of Illinois, for his enthusiastic, imaginative and dilligent performance as editor of our *Journal*. In turn, we wish to extend an invitation to our new Editor, Dalton E. McFarland of Michigan State University, to seek out the assistance of the Committee whenever he feels we can be of help. The Committee looks forward to continued growth and recognition of the *Journal*.

Research Activities of the Academy of Management

For the past two years the Academy of Management and the American Management Association have cooperated on six research projects. The arrangement has been for the Academy to publicize the availability of research grants, screen proposals from applicants and submit recommended proposals to the American Management Association. The AMA in turn would accept or reject the proposal submitted by the Academy. For accepted proposals the American Management Association makes direct contact with the researcher and makes financial arrangements with the researcher's educational institution. The Academy attempts to keep abreast of the progress being made by each researcher. The six research projects currently under study are listed below by name of the researcher and topic.

Joseph A. Letterer, Assistant Professor of Management
University of Illinois
"The Emergence of Staff Departments"

Arthur Lesser, Jr., Head, Department of Industrial Engineering
Stevens Institute of Technology
"Capital Management: The Planning, Administration and Control of Capital Expenditures."

Charles L. Quittmeyer, Associate Professor of Commerce
University of Virginia
"A Study of Management Consulting"

Ralph E. Balyeat, Associate Professor of Industrial Relations
University of Wichita
"A Technique for Measuring Industrial Relations Practices"

Fremont A. Shull, Jr., Assistant Professor of Management
Indiana University (and)
Delbert C. Miller, Professor of Sociology
Indiana University
"Role Conflict Behavior in Administration. Studies in the Validation of a Theory of Role Conflict Resolution"

Harvey A. Maertin, Lecturer, Production Management Department
Northwestern University
"Method of Analyzing an Automation Proposal"

The American Management Association has expressed an interest in continuing their research relationship with the Academy.

New Research Items Discussed by Committee

The Committee recommended that the Chairman explore the following areas:

1. Requests of the AMA to consider the feasibility of increasing the size of individual grants to include a stipend for salary adjustments for researcher who may wish to do full time research in place of teaching.
2. Make contact with agencies other than the AMA to discuss the feasibility of similar research cooperation. The Society for the Advancement of Management has expressed an interest in discussing a possible research association with the Academy. Other organizations which may be contacted are the Chamber of Commerce, the National Association of Manufacturers, and the Controllers Institute.
3. Contact selected businesses to see if they are interested in undertaking a research arrangement with the Academy.

It was decided that the Academy would defer any contact with foundations such as the Ford Foundation. It was thought that if some additional research arrangements are entered into (see items 2 and 3 above) it may be feasible within a few years to ask for very large sums from foundations.

As research and publication activity of the Academy increase, it may be desirable to consider setting up an Academy of Management Research Foundation.

Research and Publications Committee Members:

David W. Belcher
Wayne G. Broehl, Jr.
Lee E. Danielson
Preston P. LeBreton
Claude S. George
Dale A. Henning
Wayne L. McNaughton
Stanley J. Seimer
Charles Summer, Jr.

As Chairman of the Research and Publications Committee, I wish to extend my personal thanks to each member of the Committee for his fine spirit of cooperation displayed during the year. Countless items of an innovative nature have come from Committee members. It is hoped that these ideas have been reflected in this report.

Respectfully submitted,
Preston P. LeBreton, Chm.

REPORT OF THE EDITOR, JOURNAL OF THE ACADEMY OF MANAGEMENT

December 28, 1960

This report brings to a close three and one-half years of work on the *Journal of the Academy of Management*. Counting the original trial issue, which was published in August of 1957, ten issues of the *Journal* have now been printed. In addition, most of the early issues have been re-published in order to meet the greatly expanded demand for back issues as our subscription roster continues to expand and as libraries all over the world are carrying the *Journal* on their shelves.

Total paid and exchange circulation of the *Journal* is now approaching 1,200 names. These include subscriptions from all over the world, including several from Russia. The list also includes most of our country's largest business corporations and leading governmental offices such as the Pentagon, the National Security Agency, the Bureau of the Budget, the Internal Revenue Service, the Small Business Administration, the various branches of the armed forces, and many others. As of this date, some 370 of these subscriptions are Academy members, whose subscriptions are automatically paid for along with their academy membership dues.

The *Journal* is on a sound financial basis. In addition to a sizeable cash balance, the *Journal* possesses an inventory of over 3,500 booklets valued conservatively at about $1.00 each. Thus, the total amount thus far received from the Academy ($3,500.00 in all) is still on hand within the Academy as a part of the *Journal's* resources. This fact suggests that in one sense the members of the Academy have in effect for the last three years received their issues without cost to themselves or the Academy.

The workload connected with publishing and re-publishing these early issues of the *Journal* has been quite heavy, especially in terms of typing multilith mats, and collating and binding the booklets. Now that the *Journal* is being type-set, this part of the work has been eliminated. The Academy owes a debt of gratitude to my good wife, who has over the last several years worked many, many hours on the Journal without reimbursement from any source.*

Although further enhancement of the quality of the contents of our *Journal* is both desirable and necessary, if it is soon to become *the* outstanding publication of its kind, it is safe to say that the *Journal* is already being increasingly recognized as being among the leading journals in the management field. Evidence for this statement comes to us from many sources; however, two of the most tangible indications that our *Journal's* stature is growing are the high quality of the articles that have recently been received from authors everywhere and the growing widespread use of our articles in executive development and other programs in this country and abroad.

The Academy owes a debt of gratitude also to the associate editors, Dalton E. McFarland and Preston LeBreton, to the other members of the Research and Publications committee, namely, David W. Belcher, Wayne G. Broehl, Jr., Lee E. Danielson, Claude S. George, Jr., Dale A. Henning, Wayne L. McNaughton, Stanley J. Seimer, and Charles E. Summer, Jr., and to its Board of Editorial Consultants listed on the title page of the *Journal*. The members of the Research and Publications Committee have reviewed some 70 or so manuscripts during the course of the year and the Editorial Consultants have been helpful in assisting us in defining a sharper image for the *Journal*.

During the course of the last few years, literally thousands of letters and notes have been written and mailed and tens of thousands of flyers publicizing the *Journal* have been sent out. The correspondence, clerical and secretarial workloads of the *Journal* are heavy and will probably continue to increase.

Our *Journal* has received some "free" publicity and recognition from various leading organizations and from many periodicals. We have also arranged to have the *Journal* displayed at various national and international conferences and fairs.

It has been a privilege and a rewarding experience to serve the Academy of Management as editor of its *Journal*. May I ask that each of you give our new Editor-in-Chief, Professor Dalton E. McFarland, the same fine help and friendly co-operation which you have accorded me during the past three and one-half years.

Respectfully submitted,
Paul M. Dauten, Jr.

*Mrs. Dauten acknowledges with thanks the beautiful necklace-bracelet-earring set which she unexpectedly received in January, 1961 from the Academy in gratefulness for her work on the *Journal*.

REPORT OF THE NOMINATIONS AND ELECTIONS COMMITTEE
December 28, 1960

1. In response to a request from President Towle for nominations for Academy offices for the year 1961, your committee solicited suggestions from a number of long-term members of the Academy.

2. The committee agreed on a slate of nominees, taken from the names suggested.

3. This slate was submitted to the President.

4. The Secretary of the Academy submitted the slate of the nominees to the membership for a letter ballot.

(a) The ballot form provided space for write-in nominations.

5. The Secretary has tallied the ballots: Your committee is informed that the following members have been elected to the offices indicated, for the year, 1961:

For President: George R. Terry, Northwestern University

For Vice-President: Harold Smiddy, The General Electric Company

For Secretary-Treasurer: Keith Davis, Arizona State University

Board of Governors for terms expiring December, 1962:

C. Canby Balderston

Harold Koontz

6. It will be recalled that the present Editor of the *Journal*, Paul Dauten, wished to be relieved of his editorial responsibilities. The present Secretary-treasurer, Dalton McFarland agreed to take over the editorship at the request of the President.

For the Nominations and Elections Committee:

Alvin Brown
W. E. Newman
Ralph C. Davis, Chairman

REPORT OF THE PUBLIC RELATIONS COMMITTEE
December 28, 1960

Last year the Public Relations Committee recommended that the Academy should recognize annually the person who has made the most significant contribution to management. Professor Ronald Shuman independently made the same suggestion. At the request of President Towle, your committee has discussed this award and has made the following recommendations.

1. That a gold medal called the Distinguished Management Award of the Academy of Management be designed for presentation.
   (a) This award would be presented to the candidate, who has in the opinion of the *Award* Committee, met the following qualifications.
      (1) He has made a contribution (of national importance) to management theory or practice in the last three years. Evidence of this should be available in something he has written or which has been written about him.
      (2) Furthermore, that the recipient be recognized as an outstanding student of Management.
      (3) He must be present to accept the award at the annual luncheon meeting.

Lastly, your Committee surveyed many schools in order to obtain information on management research for publicity purposes. The response on this was so limited that insufficient material was obtained.

Respectfully submitted,
Clifton Oliver
Stanley Bryan
Everette Hong
Wendell French
Thomas Luck, Chairman

REPORT OF THE PRESIDENT
December 28, 1960

Ninteen-sixty has been a successful year for the Academy of Management. In addition to normal operations several progressive steps have been taken which are worthy of special mention. With the approval of the Board of Governors a group of Academy members in the western states organized the Western Chapter of the Academy of Management and held their first annual meeting — the first official Academy of Management meeting on the west coast. Growth of the Academy was also evidenced by a normal expansion of the membership. The Membership Committee has been successful this year in selecting and inviting into membership several distinguished and qualified business executives.

At the suggestion of both Past President Ronald Shuman and our Public Relations Committee the Board of Governors approved a plan for establishing an Academy of Management Gold Medal, an award to be made annually or bi-annually to an individual who has made an outstanding contribution to the theory and practice of management. For the present, the Public Relations Committee is to be responsible for the selection of candidates and for the presentation of these awards. At some time in the future it might be desirable to appoint an Awards Committee.

The *Journal of the Academy of Management*, under the editorship of Professor Paul Dauten has continued to grow and its format has been

improved. After three years of service as editor, during which time the *Journal* was initiated and firmly established, Professor Dauten has resigned his post. The Board of Governors has appointed Professor Dalton E. McFarland to be the new editor of the *Journal* for a three-year term beginning in January, 1961. The Academy extends its appreciation and congratulations to Professor Dauten for his loyal and sincere service as the first editor of the *Journal*, and we look forward to continued progress under the editorship of Professor McFarland.

For the first time in several years the Program of the Annual Meeting of our Academy is included in the programs for the meetings of the Allied Social Science Associations. This has necessitated the sale of tickets for the American Economic Association meetings at our registration desk. It permits us, however, to share in the profits resulting from the operation of the meetings. It also obligates us to share in the losses, if there should be any. For many consecutive years the annual meetings have operated at a profit. The Officers and the Arrangements Committee took it upon themselves to cooperate with the other organizations in this manner this year. The Academy may take action to provide for this arrangement on a continuous basis or the matter may be left to the discretion of the committee in charge of each annual meeting.

As the Academy faces the future several policy matters will need attention. Action may be taken by the membership in advance or decisions can be made by the officers and the Board of Governors as they are needed. Among the problems which may arise in the near future are the following:

1. The organization of the Western Chapter by Harold Koontz, William Voris, Austin Grimshaw, Keith Davis, Wayne McNaughton and other Academy members on or near the west coast raises the question of regional organizations in other parts of the country. There are regional groups of management professors in several areas of the country and many Academy members participate in their activities. Should the Academy encourage and invite these groups to formally affiliate with the national organization, or should the Academy only consider this expansion when affiliation is solicited, as in the case of the Western Chapter? Regional meetings of teachers of management have been held as supplements to the Academy's annual meetings.

   Apparently, one meeting a year does not meet the needs of many of our members, and some are not able to attend our annual national meetings. There might be advantages for all in having the Academy share in the sponsorship of regional programs.

2. At the present time the *Journal of the Academy of Management* is authorized by the constitution as an activity of the Research and Publications Committee. At the time the constitution was developed there had been no experience with the publication of a *Journal*. When Professor Dauten resigned from the editorship of the *Journal* there was neither policy nor precedent for the appointment of a new editor. In addition, the activities of the Research and Publications Committee have expanded, especially with the research opportunities made available through our cooperation with the American Managment Association. These conditions, new to Academy experience, indicate that a provision for the *Journal* and its continued operation could be made more definite by an amendment to our constitution or by-laws.

3. During the past two years Chairman Max Richards of our Membership Committee has been investigating standards and criteria used in the evaluation applications for membership in professional societies. It has not been entirely clear that Academy membership is open to university lecturers, management consultants who were formerly professors, industrial trainers and executive development managers who have doctor's degrees, etc. If the Academy develops regional organizations or local chapters it will, no doubt, be necessary to revise our qualifications for membership. It might be desirable to establish a classification of "associate member" within the organization.

4. Since the International Management Congress will next be held in New York City in 1963, it is appropriate for the Academy to reconsider affiliation with the Council for Internationl Progress in Management, the American representative which cooperates with C.I.O.S. (Comité Internationale de I' Organizatione Scientifique) which sponsors these meetings.

At this time I would like to thank the Officers, the Committee Chairmen, Committee Members, and the Members of the Board of Governors who have done so much for the benefit of the Association during the past year. The fine spirit of cooperation and the fellowship which exists within the ranks of the Academy have made it a pleasure for me to serve as President in 1960.

Our Academy is an association and a forum providing us with the means to improve the standards of our professions — the teaching profession and the profession of management. Through the exchange of ideas, through research, through writings, and, most of all through the training and development of competent managers, we are able to make very constructive contributions to the solution of business and economic problems.

Respectfully submitted,
Joseph W. Towle

Academy of Management

Directory of Members

(*Denotes Fellow in the Academy)

Mr. Israel Ambramowitz
2462 Claver Road
University Heights, Ohio

Professor Wyeth Allen
University of Michigan
225 West Engineering Bldg.
Ann Arbor, Michigan

Professor Laird B. Allison
1615 S. El Molino
Alhambra, California

*Mr. A. G. Anderson
2506 Via Viesta
LaJolla, California

*Professor E. H. Anderson
School of Comm. & Business Adm.
University of Alabama
University, Alabama

Professor G. Jay Anyon
Wharton School of Business
Univ. of Pennsylvania
Phildelphia, Pennsylvania

Mr. William J. Arnold
Management Editor, Business Week
330 West 42nd Street
New York 36, New York

Professor Joseph K. Bailey
Wagganer Hall 123
University of Texas
Austin 12, Texas

Professor Robert E. Baird
Dept. of Per. & Prod. Administration
Michigan State University
East Lansing, Michigan

Dr. Henry G. Baker
University of Cincinnati
Cincinnati 21, Ohio

*Hon. C. C. Balderston
Bd. of Gov. Fed. Res. Bldg.
20th Constitution Ave.
Washington, D.C.

Dr. Robert W. Barclay, Director
Mead Johnson Institute
Mead Johnson & Co.
Evansville, Indiana

Professor Edward Barnet
Dept. of Marketing
Michigan State University
East Lansing, Michigan

Professor Stephen J. Barres
Division of Bus. & Econ.
Orange County St. College
Fullerton, Cal.

Professor Andrew Barta
College of Business Administration
Syracuse University
Syracuse, New York

Professor Clifford M. Baumback
School of Bus. Administration
State University of Iowa
Iowa City, Iowa

*Professor John R. Beishline
School of Comm. Accts. & Finance
New York University
Washington Square, N.Y., 3, N.Y.

Professor David W. Belcher
Dept. of Management
San Diego State College
San Diego 15, California

Professor Wm. M. Berliner
School of Commerce
New York University
Washington Square, N.Y., 3, New York

Professor Wilmar F. Bernthal
School of Business
University of Colorado
Boulder, Colorado

Dean Hilary R. Beth
School of Business
University of Dayton
Dayton, Ohio

Professor Bernard J. Bienvenu
Dep. of Mgmt. Box 598
Southwestern Louisiana Institute
Lafayette, Louisiana

Professor Luther D. Bishop
Faculty Exchange
University of Oklahoma
Norman, Oklahoma

Mr. Jacob J. Blair
765 Gypsy Lane
Pittsburgh 34, Penn.

Mr. Robert L. Blomstrom
245 Cairo Drive
Tempe, Arizona

Professor William F. Boore
School of Economics and Business
Washington State University
Pullman, Washington

Professor Alfred Bornemann
Apt. C5, 151 Engle Street
Englewood, New Jersey

Dean Leon Bosch
Graduate School of Business
Northwestern University, 339 E. Chicago
Chicago 11, Illinois

Mr. Thomas Bossort
1110 Brooks Lane
Bloomington, Indiana

Professor James B. Boulden
School of Business Administration
University of California
Los Angeles, California

Professor Edward H. Bowman
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Professor J. Richard Box
219 Irwin Hall
Miami University
Oxford, Ohio

*Professor Robert P. Brecht, Chairman
Geo. & Ind. Dept.
University of Pennsylvania
Phildelphia 4, Penn.

Professor Francis J. Bridges
Georgia St. Coll. of Bus. Adminis.
33 Gilmer Street, SE
Atlanta 3, Georgia

Prof. James R. Bright
Harvard Univ.
Grad. School of Bus. Ad.
Boston 63, Mass.

Professor Wayne G. Broehl, Jr.
University College
Dublin, Ireland

Professor H. N. Broom
School of Business
Baylor University
Waco, Texas

Professor John M. Brophy
School of Business Administration
University of Rochester
Rochester, New York

*Mr. Alvin Brown
Bethany Beach, Delaware

Mr. Carroll J. Brown
P.O. Box 1000
Standard Vacuum Oil Co.
White Plains, New York

Professor Edward G. Brown
Commerce Hall
University of Washington
Seattle, Washington

Professor Leslie A. Bryan
318 Civil Engineering Hall
University of Illinois
Urabana, Illinois

Professor Stanley E. Bryan
Dept. of Per. & Prod. Admins.
Michigan State University
East Lansing, Michigan

Professor Elwood S. Buffa
School of Business Administration
University of California
Los Angeles 24, California

Professor John E. Burns
College of Commerce
DePaul University
Chicago 4, Illinois

Dean Edward C. Burris
College of Business
Oklahoma State University
Stillwater, Oklahoma

Professor Harry Buttimer
6126 Ascot Drive
Oakland, California

Professor Charles L. Campbell
Hillsdale College
Hillsdale, Michigan

Professor W. R. Campbell
School of Business Adm.
Arizona State University
Tempe, Arizona

Professor Albert A. Canfield
Dept. of Management
Wayne State University
Detroit 2, Michigan

Professor Robert W. Carney
Industrial Mgt. School
Georgia Inst. of Tech.
Atlanta 13, Georgia

Professor Joseph Carrabino
Graduate School of Business Adm.
University of California
Los Angeles, California

Mr. Thomas Henry Carroll
Maywood Road
Darien, Connecticut

Mr. Phil Carroll
6 Crestwood Drive
Maplewood, New Jersey

Professor Martin B. Carter
New York University
Washington Square
New York 3. New York

Professor Rocco Carzo, Jr.
College of Business Administration
Pennsylvania State University
University Park, Penn.

Professor James E. Chapman
Georgia State College
33 Gilmer Street, S.E.
Atlanta 3, Georgia

Professor W. Van Alan Clark, Jr.
Sippican Corporation
Marion, Mass.

Professor Robert H. Cojeen
Univ. of Michigan — Flint College
1401 E. Court St.
Flint, Michigan

Professor Robert G. Cook
School of Business and Public Adm.
University of Missouri
Columbia, Missouri

Professor Robert I. Cook
Tri-State College
Angola, Indiana

Professor Edward G. Cornelius
Box 129 A Tech Station
Cookeville, Tennessee

Professor Paul R. Cone, Chairman
Department of Bus. & Ind. Management
University of Southern California
Los Angeles 7, California

Francis J. Corrigan, Director
Department of Management
St. Louis University
3674 Lindell Boulevard
St. Louis 8, Missouri

*Professor Maurice C. Cross
College of Business Administration
Syracuse University
Syracuse, New York

Professor Jack F. Culley
1644 Morningside Drive
Iowa City, Iowa

Professor Alfred B. Cummins
School of Business, Cutler Hall
Western Reserve University
Cleveland 6, Ohio

Professor Edmond H. Curcuru
School of Business
Miami University
Oxford, Ohio

Dr. Ernest Dale
Graduate School of Bus. and Pub. Adm.
Cornell University
Ithaca, New York

Professor Lee E. Danielson
University of Michigan
Ann Arbor, Michigan

Mr. John W. Darr
PO Box 304
St. College, Mississippi

Professor Paul M. Dauten, Jr.
917 Lincolnshire Drive
Champaign, Illinois

Professor Maurice Davier
Graduate School of Business
University of Virginia
Charlottesville, Virginia

*Professor Keith Davis
Chairman, Dept. of Management
Arizona State University
Tempe, Arizona

*Professor Ralph C. Davis
College of Commerce & Administration
The Ohio State University
Columbus 10, Ohio

Mr. David R. Day
Bureau of Business Research
Ohio State University
Columbus, Ohio

Professor Nicholas J. Demerath, Dir.
Social Science Institute
Washington University
St. Louis 30, Missouri

Professor Frank A. DePhillips
School of Comm., New York University
Washington Square
New York 3, New York

Mr. Ellis M. Derby
35 Reynen Court
Ridgewood, New Jersey

Professor Bruce DeSpelder
Department of Management
Wayne State University
Detroit 1, Michigan

Dr. Norman Deunk
IBM Inc.
618 S. Michigan
Chicago, Illinois

Professor Jack T. Dobson
School of Business
Florida State University
Tallahassee, Forida

Professor Paul Donham
Rock Harbor Road
Orleans, Massachusetts

Dean Richard Donham
Northwestern University, School of Bus.
Evanston, Illinois

Professor Arch. R. Dooley
Harvard School of Business
Soldiers Field
Boston 63, Mass.

Professor John Douglas
School of Business Administration
Wayne State University
Detroit, Michigan

Professor John T. Doutt
School of Business
University of Colorado
Boulder, Colorado

Dr. Peter F. Drucker
138 North Mountain Avenue
Montclair, New Jersey

*Professor Henry P. Dutton
1704 Clairmont Drive
Hendersonville, North Carolina

Professor Robert W. Dvorsky
School of Business
Bowling Green University
Bowling Green, Ohio

Professor Elbert T. Eggers
Georgia State College of Bus. Adm.
Atlanta 3, Georgia

*Mr. Robert W. Elsasser
1713 Pere Marquette Bldg.
New Orleans, Louisiana

Professor John T. Emerson
Division of Business
Fresno State College
Fresno 26, California

Professor Richard F. Ericson
George Washington University
Washington 6, D.C.

Professor Henry J. Engler, Jr.
College of Bus. Admin.
Loyola University
New Orleans 18, Louisiana

Professor Chester E. Evans
School of Business Admin.
Wayne State University
Detroit 2, Michigan

Professor Lee S. Evans
1730 S. Cook St.
Denver 10, Colorado

Professor Harry F. Evarts
School of Business
Northwestern University
Evanston, Illinois

Professor Robert B. Fetter
Barberry Lane
Woodridge, Conn.

*Professor George Filipetti
215 Bon Air St.
LaJolla, California

Mr. L. S. Fish, Asst. to Chairman
Standard Vacuum Oil Co.
1000 Westchester Ave.
White Plains, New York

Professor Edwin B. Flippo
Division of Business
Los Angeles State College
Los Angeles, California

*Professor F. E. Folts
Grad. School of Bus. Admin.
Harvard University
Boston 63, Mass.

Mr. Edwin J. Forsythe
1172 Student Center
Wayne State University
Detroit, Michigan

Professor Samuel Fox
University of Illinois at Chicago
Navy Pier
Chicago 11, Illinois

Professor William M. Fox
College of Business Administration
University of Florida
Gainsville, Florida

Professor Wendell L. French
University of Washington
College of Business Admin.
Seattle 5, Washington

Professor Walter Gast
1545 N. 58th St.
Milwaukee 8, Wisc.

Professor Richard K. Gaumntz
School of Business Administration
University of Minnesota
Minneapolis, Minnesota

Professor Claude S. George, Jr.
College of Business Administration
University of North Carolina
Chapel Hill, North Carolina

Mr. Norman George
Manager, Research & Development
National Mgr. Assoc., 333 W. First St.
Dayton 2, Ohio

Prof. John B. Gertz
S.S. No. 1, Tecumseh
Ontario, Canada

Professor Joseph Gill
University of Arizona
Tucson, Arizona

Professor Frank F. Gilmore
School of Business Administration
Cornell University
Ithaca, New York

Professor Thomas Gilson
Department of Management
Rutgers University
Newark, New Jersey

Professor N. A. Glaskowsky, Jr.
School of Business Administration
University of Minnesota
Minneapolis 14, Minnesota

Professor John G. Glover
22 Fairway Drive
West Orange, New Jersey

*Professor B. Goetz
School of Industrial Management
Mass. Inst. of Tech.
Cambridge 39, Mass.

Professor Paul C. Goelz
St. Mary's University
Woodlawn Campus
San Antonio 1, Texas

Professor Bela Gold
Graduate School of Business
University of Pittsburgh
Pittsburgh 13, Pennsylvania

Professor William Gomberg
Wharton School of Business
University of Pennsylvania
Philadelphia, Penn.

Professor George J. Gore
College of Business Administration
University of Cincinnati
Cincinnati 21, Ohio

Professor Richard Gonzalez
Personnel & Production Adm. Dept.
Michigan State University
East Lansing, Michigan

Professor Paul J. Gordon
School of Business
Indiana University
Bloomington, Indiana

Mr. Milton Gordon
830 Rim Road
Pasadena, California

*Professor Charles B. Gordy
American Embassy, A.P.O. 500
San Francisco, California

Professor Malcolm H. Gotterer
Box 191
Berkeley 1, California

Professor Paul Grambsch
Dean, College of Business
University of Minnesota
Minneapolis 14, Minnesota

*Professor Robert D. Gray, Director
Industrial Relations Section
California Inst. of Technology
Pasadena 4, California

Professor R. Earl Green
School of Industrial Management
Georgia Institute of Technology
Atlanta, Georgia

Dean Paul M. Green
214 David Kinley Hall
University of Illinois
Urbana, Illinois

Professor William E. Green
Box 602
University of Mississippi
University, Mississippi

Professor Paul S. Greenlaw
Box 14, Boucke Building
Pennsyvania State University
University Park, Pennsylvania

Dr. William T. Greenwood
College of Business Administration
Arizona State University
Tempe, Arizona

*Dean Austin Grimshaw
College of Business Administration
University of Washington
Seattle, Washington

Professor Lawrence C. Hackemack
School of Business
University of Massachusetts
Amherst, Massachusetts

Dr. Charles W. Hackett
U.S. Steel Corporation
525 William Penn Place
Pittsburgh 30, Pennsylvania

Professor C. D. Hadley
College of Business
University of Santa Clara
Santa Clara, California

Professor Theodore Haimann
School of Commerce
St. Louis University
St. Louis, Missouri

Professor H. Lawrence Hall
School of Comm. USC, Univ. Park
Los Angeles 7, California

Professor Bernard Hanes
Los Angeles State College
5151 State College Dr.
Los Angeles 32, California

Professor William R. Hammond
School of Business Administration
Atlanta Div. Univ. of Ga. 24 Joy St.
Atlanta, Georgia

Dean M. M. Hargrove
University of Tulsa
Tulsa 4, Oklahoma

Professor J. A. Harlan
3955 East Poe Street
Tucson, Arizona

Dean Ike H. Harrison
School of Business
Texas Christian University
Fort Worth, Texas

Professor Fred V. Hartenstein
Western Michigan University
School of Business
Kalamazoo, Michigan

Mr. Robert E. Hastings
Research Associate
303 Wallace Drive
Fairborn, Ohio

Professor R. C. Hauser
General Delivery
Southwestern Lousianna Institute
Lafayette, Louisiana

Professor Robert D. Hay
College of Business Administration
University of Arkansas
Fayetteville, Arkansas

Professor James L. Hayes, Dean
School of Business Administration
Duquesne University
Pittsburgh, Pennsylvania

Dr. James H. Healey
Management & Business Services
P.O. Box 146
Columbus 16, Ohio

Professor Irvin L. Heckmann, Jr.
126 David Kinley Hall
Coll of Comm. & Bus. Administration
Urbana, Illinois

Professor Edwin T. Hellebrandt
153 Morris Avenue
P.O. Box 228
Athens, Ohio

Professor Robert D. Henderson
Dept. of Business Adminstration
Bowling Green State University
Bowling Green, Ohio

Professor John W. Hennessey
Amos Tuck School of Bus. Adm.
Dartmouth College
Hanover, New Hampshire

Professor Dale A. Henning
College of Business Administration
University of Washington
Seattle, Washington

Mr. Frank Henry
Oneida, Illinois

Professor Herbert G. Hicks
College of Business Administration
Louisiana State University
Baton Rouge, Louisiana

Professor John H. Hoagland
Dept. of Per. & Prod. Adm.
Michigan State University
East Lansing, Michigan

Professor Henry G. Hodges
1425 Trillo Ave.
Coral Gables, Florida

Professor James C. Hodgetts
3323 Stanhope Drive
Toledo 6, Ohio

*Professor Paul E. Holden
Graduate School of Business
Stanford University
Stanford, California

Professor Clay Hollister
Ernst & Ernst
Union Commerce Bldg.
Cleveland 14, Ohio

Professor Everette N. Hong
Chairman of Management Dept.
Southern Illinois University
Carbondale, Illinois

Professor Robert J. House
Ohio State University
Haggert Hall
Columbus, Ohio

Professor Arthur H. Hoverland
Division of Business
San Jose State College
San Jose, California

Professor James M. Hund
School of Business Administration
Emory University
Atlanta 22, Georgia

Professor Arch W. Hunt
Baylor University
Waco Texas

Dean Morris E. Hurley, Jr.
105 Slocum Hall
Syracuse University
Syracuse 10, New York

Professor William E. Hurley
Ohio State University
School of Logistics, Bldg. 228, Area A
Wright-Patterson AFB, Ohio

Professor John Ih-Sen Hsu
Dept of Industrial Adm.
Villanova University
Villanova, Pennsylvania

Professor Thomas S. Isaak
College of Business Administration
West Virginia University
Morgantown, West Virginia

Professor Wm. J. Jaffe
Dept. of Management Engr.
Newark College of Engr.
Newark 2, New Jersey

*Professor Virgil A. James
4520 Balcones Drive
Austin, Texas

*Professor C. L. Jamison
School of Business Administration
University of Michigan
Ann Arbor, Michigan

Professor Joe L. Jessup
George Washington University
Washington 6, D.C.

Professor Alton C. Johnson
School of Commerce
University of Wisconsin
Madison, Wisconsin

Professor Howard W. Johnson
School of Industrial Management
Mass. Inst. of Tech.
Cambridge, Massachusetts

Professor Rossall J. Johnson
School of Business
Northwestern University
Evanston, Illinois

Professor Manley H. Jones
Business & Economics Dept.
Ill. Inst. of Tech.
330 Federal St., Chicago, Ill.

*Professor Michael J. Jucius
College of Commerce & Admin.
The Ohio State University
Columbus 10, Ohio

Professor Henry Juckerstorff
6650 Devonshire Avenue
St. Louis 9, Missouri

*Professor V. S. Karabasz
School of Business Admin.
University of Miami
Coral Gables, Florida

Professor Robert L. Katz
130 Brookwood Rd.
Woodside, Calif.

Professor Fremont E. Kast
College of Bus. Admin.
University of Washington
Seattle 5, Washington

Professor Leonard J. Kazmier
School of Business Administration
Wayne State University
Detroit 2, Michigan

Professor James M. Keech
Department of Management
University of Miami
Coral Gables, Florida

Professor Lyman A. Keith
Northeastern University
360 Huntingdon Avenue
Boston 15, Massachusetts

Dean Richard A. Kelley
College of Special Studies
Tufts University
Medford 55, Massachusetts

Professor Wm. H. Keown
Dept of Business Mgmt.
University of Oklahoma
Norman, Oklahoma

Professor Jerome Lyle Kerby
School of Business
Texas Christian University
Ft. Worth, Texas

Professor Fred E. Kindig
School of Business Administration
University of Pittsburgh
Pittsburgh 13, Penn.

Professor Frederick R. Klein
Apartment 54
106 Morningside Drive
New York 27, New York

Professor Walter H. Klein
Industrial Administration Department
Villanova University
Villanova, Pennsylvania

Professor John B. Kline
School of Business
University of Colorado
Boulder, Colorado

Mr. Herbert F. Klingman
600 W. Kilbourn Ave.
Milwaukee 3, Wisconsin

Mr. Raymond H. Klug
6833 Gardenview Drive
Dayton 31, Ohio

President Asa S. Knowles
Northeastern University
Boston, Massachusetts

Professor Harry R. Knudson, Jr.
Commerce 220
University of Washington
Seatte 5, Washington

Dr. Edward G. Koch
Graduate School of Business
University of California
Los Angeles 24, Calif.

*Professor Harold Koontz
Graduate School of Business Admin.
University of California
Los Angeles 24, California

Professor Harold E. Kubly
332 Commerce Building
University of Wisconsin
Madison 6, Wisconsin

Professor Rudolph L. Lagai
N.Y. Univ. School of Commerce
Washington Square,
New York 3, N.Y.

Prof. W. E. Lane
Head, Dept. of Industrial Mgt.
Auburn University
Auburn, Alabama

Professor Adolph Langsner
2640 W. Coyle Avenue
Chicago 45, Ill.

*Professor Chester F. Lay
Trinity University
715 Stadium Drive
San Antonio 12, Texas

Professor Pedro C. Leano
College of Business Admin.
Northeastern University
Boston 15, Massachusetts

Professor Preston P. LeBreton
College of Commerce
University of Washington
Seattle 5, Washington

Professor H. K. L'Ecuyer
1720 Louisiana Street
Lawrence, Kansas

*Professor K. E. Leib
College of Commerce
State University of Iowa
Iowa City, Iowa

Mr. Ira M. Levy
21709 Elkwood St.
Canoga Park, Calif.

Professor Cyril C. Ling
College of Business Administration
University of Cincinnati
Cincinnati 21, Ohio

Professor Otis Lipstreu
School of Business
University of Colorado
Boulder Colorado

Professor C. L. Littlefield
Dept. of Management
North Texas State College
Denton, Texas

Professor James P. Logan
Graduate School of Business
Columbia University
New York, New York

Professor Justin G. Longenecker
Baylor University
School of Business
Waco, Texas

Professor N. P. Loomba
College of Business Administration
University of Iowa
Iowa City, Iowa

Professor Eden C. Lorentzen
Room 212 Annex
University of Utah
Salt Lake City, Utah

Dr. Tom Luck
212 Fleetwood
Bloomington, Ill.

Professor Henry Ludmer
134 Peach Street
Park Forest, Illinois

Professor Rodney F. Luther
L.A. State College
18111 Nordhoff St.
Northridge, Calif.

*Professor Charles W. Lytle
226 Hunter Ave.
Philpse Manor
Tarrytown, New York

Professor Adrian M. McDonough
Wharton School
University of Pennsylvania
Philadelphia 4, Pennsylvania

Professor Ward J. McDowell
Arthur D. Little, Inc.
Acorn Park
Cambridge 40, Massachusetts

*Professor Dalton E. McFarland
Dept. of Personnel & Prod.
College of Bus. Adm. & Pub. Services
Michigan State University
East Lansing, Michigan

Professor Claude McMillan
Personnel & Production Adm. Dept.
Michigan State University
East Lansing, Michigan

Professor Stewart Y. McMullen
Head, Department of Management
University of Illinois
Urbana, Illinois

*Professor Wayne McNaughton
School of Business Administration
University of California
Los Angeles 24, California

Professor Walter J. McNarney
School of Business Administration
University of Michigan
Ann Arbor, Michigan

Professor Huxley Madeheim
Bernard M. Baruch Sch. of Bus.
City College of N.Y., 17 Lexington Ave.
New York, New York

Mr. Harvey A Maertin
2257 Densmore Drive
Toledo 6, Ohio

*Professor M. J. Mandeville
Dept. of Mgmt.
University of Illinois
Urbana, Illinois

Professor Robt. C. Manhart
116 B. and P.A. Bldg.
University of Missouri
Columbia, Missouri

Professor Karl O. Mann
University of Toledo
Toledo 6, Ohio

Professor Jack W. Martin
School of Bus. Admin.
Unicversity of Denver
Denver, Colorado

Professor Joseph L. Massie
College of Commerce
University of Kentucky
Lexington, Kentucky

Professor Thomas R. Masterson
School of Bus. Admin.
Emory University
Atlanta, Georgia

Mr. M. M. Mautner
435½ South Hamel Road
Los Angeles 48, California

*Professor John F. Mee, Chairman
Dept. of Mgmt.
Sch. of Bus., Indiana Univ.
Bloomington, Indiana

Professor Leon C. Magginson
College of Commerce
Louisiana State University
Baton Rouge, Louisiana

Mr. V. A. Metzger
11631 Wintersburg Ave.
Route 4
Santa Ana, California

Mrs. M. A. Miles
Box 1522
University, Alabama

Professor Charles S. Miller
College of Business Administration
University of Nebraska
Lincoln, Nebraska

Mr. Ben Miller
St. John's University
Grand Central & Utopia Parkway
Jamaica 32, New York

Professor H. Jefferson Mills, Jr.
School of Engineering
George Washington University
Washington, D. C.

Professor Charles R. Milton
147 Mimosa Drive
Charlottesville, Virginia

Mr. Walter Mitchell, Jr.
Executive Director
Soc. for Adv. of Mgt., 74 5th Ave.
New York 11, New York

Professor B. R. Moeckel
College of Comm. & Admin.
Ohio State University
Columbus, Ohio

Professor David G. Moore
Dept. of Gen. Business
Michigan State University
East Lansing, Michigan

*Professor Franklin G. Moore
University of Michigan
Ann Arbor, Michigan

Professor Leo B. Moore
Rm. 52-562 50 Memorial Dr.
Mass. Inst. of Tech.
Cambridge 39, Mass.

Professor R. W. Morell
St. Joseph's College
Collegeville, Indiana

Professor Edward Morrison
Div. of Management
University of Colorado
Boulder, Colorado

Professor Arthur B. Moss
Box 3607
University Station
Charlottesville, Virginia

Dean Edwin W. Mumma
College of Business Admin.
University of Texas
Austin, Texas

Professor Felix Muehlner
Matherly Hall No. 328
University of Florida
Gainesville, Florida

Professor Leslie E. Muneke
Dept. of Management
University of Houston
Houston 4, Texas

Professor Kenneth H. Myers, Jr.
School of Business
Northwestern University
Evanston, Illinois

Professor Robt. D. Myers
Dept. of Management
University of Toledo
Toledo 6, Ohio

*Dean Clark E. Meyers,
School of Business Admin.
University of Miami
Coral Gables, Fla.

Professor Judson Neff
109 Waggener Hall
University of Texas
Austin, Texas

Dr. Howard R. Neville
Director, Continuing Education
Michigan State University
East Lansing, Michigan

*Professor William Newman
Graduate School of Business
Columbia University
New York 27, New York

Professor Patrick J. Nicholson
V.P. University Development
University of Houston
Houston 4, Texas

Professor William A. Nielander
Marketing Dept.
Arizona State University
Tempe, Arizona

Professor Powell Niland
School of Business Admin.
Washington University
St. Louis 5, Missouri

Dean Thomas L. Norton
New York Univ. Sch. of Commerce
Washington Square
New York 3, New York

Professor Howard C. Nudd
Dept. of Management
University of Houston
Houston 4, Texas

Professor U. Tin Nyunt
333 Bo Hung Gyan St.
Rangoon, Burma

Professor Clinton L. Oaks, Chairman
Dept. of Bus. Management
Brigham Young University
Provo, Utah

Professor Winston Oberg
Dept. of Per. & Prod. Admin.
Michigan State University
East Lansing, Michigan

Professor George S. Odiorne
Director, Bureau of Industrial Rel.
University of Michigan
Ann Arbor, Michigan

Professor Cyril J. O'Donnell
School of Business Admin.
University of California
Los Angeles 24, California

Professor Thomas M. O'Farrell
Bureau of Labor & Management
State University of Iowa, 303 N. Capital
Iowa City, Iowa

Professor Edmund B. O'Leary
136 Hadley Road
Dayton 9, Ohio

Mr. Clifton Oliver, Jr.
P.O. Box 243
Gainesville, Florida

Professor Kenneth W. Olm
103 Waggner
University of Texas
Austin 12, Texas

*Professor Richard N. Owens
2320 Claremont Ave.
Los Angeles, Calif.

Professor Lawrence L. Parrish
School of Business Administration
University of Connecticut
Storrs, Connecticut

Dr. Saw William Paw
Professor & Dean
University of Rangoon
Rangoon, Burma

Professor Carlton A. Pederson
Graduate School of Business
Stanford University
Stanford, California

Professor Bernard D. Perkins
University of South Dakota
Vermillion, South Dakota

Professor Sidney H. Phillips
School of Bus. Adm.
Northwestern University
Evanston, Ill.

Dr. Charles D. Phillips
National Elec. Contractors Assn.
610 Ring Bldg.
Washington 6, D.C.

Mr. Chad Pierson
7333 Draper Avenue
La Jolla, California

*Professor Earl Planty
15 Hagan Blvd.
Urbana, Ill.

Professor Albert T. Polin
School of Business Administration
University of Southern California
Los Angeles 7, California

Professor Harold F. Puff
School of Business
Miami University
Oxford, Ohio

Professor Charles L. Quittmeyer
McIntire School of Commerce
University of Virginia
Charlottesville, Virginia

Mr. W. F. Rabe
12351 Deer Brook Lane
Los Angeles 49, California

Mr. Philip H. Ragan
685 Commonwealth Ave.
Boston 15, Mass.

Professor Louis J. Rago
Rockwell Hall
Duquesne University
Pittsburgh, Pennsylvania

Professor Karl G. Rahdert
Department of Business Administration
Bowling Green State University
Bowling Green, Ohio

Professor Samuel Ranhand
C. C. N. Y. Baruch Sch. of Bus.
17 Lexington Ave.
New York 10, New York

Professor Kenneth A. Reed
121 School of Business
University of Colorado
Boulder, Colorado

Professor Ira J. Rees
College of Business Administration
University of Georgia
Athens, Georgia

Dean Henry J. Rehn
School of Business
Southern Illinois University
Carbondale, Illinois

Dr. Vincent G. Reuter
119 E. Fairmont
Tempe, Ariz.

*Professor Karl D. Reyer
Dept of Bus. Admin.
Louisiana Statel University
Baton Rouge, Louisiana

Professor Max De Voe Richards
Dept of Commerce
Penn. State University
University Park, Pennsylvania

Dean Howard K. Rice
Long Island University
Zeckendorf Campus
Brooklyn 1, New York

Professor James L. Rigassio
Newark College of Engr.
Newark 2, New Jersey

Professor Arthur L. Roberts
San Fernanda Valley State College
18111 Nordhoff Street
Northridge, California

Mr. Orville W. Roberts
R.R. 1
Scipio, Indiana

*Professor H. B. Rogers
School of Business
Northwestern Univ.
Evanston, Illinois

Professor James A. Roll
c/o A. L. Roll
Lenox, Iowa

Professor Costic Roman
Oklahoma A and M College
Stillwater, Oklahoma

Professor Daniel D. Roman
16600 Sunburst
Sepulveda, Caifornia

Professor Robert M. Rompf
Business Administration
Rm. 106 Mich. State University
East Lansing, Michigan

Professor James Rosenzweig
College of Business Administration
University of Washington
Seattle 5, Washington

Professor A Bruce Rozet
853 Hanley Ave.
Los Angeles 49, California

Professor Richard T. Ruddock
Management Dept.
University of Toledo
Toledo 6, Ohio

Professor Emanuel C. Salemi
Los Angeles State College
Div. of Business & Economics
Los Angeles, California

Professor Borje O. Saxberg
College of Bus. Admin.
University of Washington
Seattle 5, Washington

Professor Joseph C. Schabacker
Chairman, Department of Commerce
424 Lorch Court
Madison 6, Wisconsin

Mrs. Lawrence L. Schkada
Box 33
Univ. of Southwestern La. Station
Lafayette, Louisiana

*Professor E. H. Schell
Mass. Inst. of Tech.
Cambridge 39, Mass.

Professor William E. Schlender
Dept. of Bus. Org.
Ohio State. Univ.
Columbus 2, Ohio

Prof. Martin F. Schmidt
School of Business 112
University of Colrado
Boulder, Colorado

Professor M. C. Schnoor, Jr.
Dept. of Mgmt., Sch. of Bus. Adm.
Wayne State University
Detroit 2, Michigan

Professor Sterling H. Schoen
School of Bus. Admin.
Washington University
St. Louis 5, Missouri

Professor Albert N. Schrieber
University of Washington
Seattle, Washington

Professor Joseph P. Schwitter
Dept. of Ind. Admin. & Prod.
Kent State University
Kent, Ohio

Professor Charles R. Scott, Jr.
Box 2607
University, Alabama

Professor Glendale O. Scott
Dept. of Bus. Admin.
Adrian College
Adrian, Michigan

Professor Preston H. Scott
3364 Ewald Circle
Detroit 38, Michigan

Professor William G. Scott
Mgmt. Dept., DePaul University
25 E. Jackson Blvd.
Chicago, Illinois

Professor Alfred N. Seelye
Dean, Coll. of Bus. & Pub. Ser.
Michigan State University
East Lansing, Michigan

*Professor Julius C. G. Seidl
Fordham University School of Business
59 W. 71st St.
New York, New York

Professor Stanley J. Seimer
College of Bus. Admin.
Syracuse University
Syracuse 10, New York

Mr. Robert G. Seymour
University of Illinois
143 Bevier Hall
Urban, Illinois

Professor Philip C. Shaak
Rugters State University
77 Hamilton Street
New Brunswick, New Jersey

Professor Richard M. Sheehan
Lamar State College of Technology
Beaumont, Texas

Professor Fremont A. Schull, Jr.
Management Department
Indian Univ. School of Business
Bloomington, Indiana

*Professor Ronald B. Shuman
College of Business Administration
University of Oklahoma
Norman, Oklahoma

Professor Alex J. Simon
Business Management Dept.
University of Oklahoma
Norman, Oklahoma

Professor Donald F. Simons
St. Mary's University
2700 Cincinnati Avenue
San Antonio, Texas

Professor Rollin H. Simonds
Dept. of Per. & Prod. Admin.
Michigan State Univ.
East Lansing, Michigan

Professor Floyd R. Simpson, Dean
Division of Business & Economics
Los Angeles State College
Los Angeles, California

Professor John B. Slocum
Management
University of Miami
Coral Gables, Florida

*Mr. Harold F. Smiddy
Vice President, General Electric Co.
570 Lexington 22
New York, New York

Professor W. Nye Smith, Jr.
Business Administration
Clarkson College of Technology
Pottsdam, New York

Professor Thomas W. Smith
2663 Ocosta Ave.
Cincinnati 11, Ohio

Professor Jerome Snyder
716 Torrance Avenue
Vestal, New York

Professor Charles Soltis
I.A.P. Dept.
Kent State University
Kent, Ohio

Professor Burnard H. Sord
114 Waggener Hall
University of Texas
Austin Texas

Mr. Myron J. Spencer, Director
Graduate Program in Business Admin.
Northeastern University
Boston 15, Massachusetts

Professor Clinton Spivey
College of Bus. and Pub. Admin.
College Park, Maryland

*Professor W. R. Spriegel
College of Business Administration
University of Texas
Austin, Texas

Professor Andrew L. Springfield
University of Tulsa
600 South College
Tulsa, Oklahoma

Professor John D. Stanley
187-67 Hillcrest Drive
Penfield, New York

Professor Harry F. Stark
Dept. of Mgmt., Rutgers Univ.
77 Hamilton Street
New Brunswick, New Jersey

Professor Jack D. Steele
School of Business
University of Kansas
Lawrence, Kansas

Professor George A. Steiner
Graduate School of Business
UCLA 4519 Varna Ave.
Sherman Oaks, California

Professor Nathaniel Stewart
2873 South Abingdon Street
Arlington 6, Virginia

Professor R. Stansbury Stockton
School of Business
Indiana University
Bloomington, Indiana

Professor Earl P. Strong
1337 S. Garner Street
State College. Penn.

Professor Charles E. Summer, Jr.
School of Business
Columbia University
New York 27, New York

Professor Waino W. Suojanen
Management School
U.S. Naval Postgraduate School
Monterey, California

Professor Arthur Lee Svenson
100 Trinity Place
N.Y. Univ. Grad. School of Bus. Admin.
New York 6, New York

Mr. Ralph O. Swain
724 Summer Avenue
Syracuse 10, New York

Professor Peter T. Swanish
Loyola Univ., Dept of Mgmt.
820 N. Michigan Ave.
Chicago, Illinois

Professor James W. Sweeney
School of Business Admin.
Tulane University
New Orleans 18, La.

Professor Ram S. Tarneja
Duquesne University
331 Fourth Ave.
Pittsburgh 22, Penn.

*Professor George W. Taylor
Geography and Industry Dept.
University of Pennsylvania
Philadephia 4, Pennsylvania

*Professor George R. Terry
N.U. School of Business
339 E. Chicago Ave.
Chicago 11, Illinois

Professor James D. Thompson
Administrative Science Center
University of Pittsburgh
Pittsburgh, Pennsylvania

Professor Hans B. Thorelli
Graduate School of Business
University of Chicago
Chicago 37, Illinois

Professor Howard L. Timms
School of Business
Indiana University
Boomington, Indiana

*Professor Joseph W. Towle
School of Business & Public Admin.
Washington University
St. Louis, Missouri

Professor Robert F. Towson, Jr.
1610 Fountain Head Road
Hagerstown, Maryland

Professor Ralph M. Traxler, Jr.
School of Business
Emory University, Georgia

Professor Wallace D. Trevillian
Dept. of Ind. Mgmt., Clemson College
Box 1258
Clemson, South Carolina

Professor Joseph M. Trickett
University of Santa Clara
Santa Cara, California

Professor Ruth E. Troy
Business Administration
College of Steubenville, Ohio

Professor Lyle R. Trueblood
College of Business Admin.
University of Tulsa
Tulsa 4, Oklahoma

Dean Ross M. Trump
School of Business & Public Admin.
Washington University
St. Louis 5, Missouri

*Professor E. H. Van Delden
20 East 74th Street
New York 21, New York

Professor John R. Van De Water
University of California at Los Angeles
Los Angles, California

Professor Stanley R. Vance
College of Business Administration
University of Oregon
Eugene, Oregon

Professor William J. Vatter
University of California
Berkeley 4, California

Professor Charles W. Voris
Los Angeles State College
5151 State College Dr.
Los Angeles 32, California

Professor Maneck S. Wadia
401 Bruce Hall
University of Pittsburgh
Pittsburgh 13, Pennsylvania

Professor Ernest W. Walker
Department of Management
University of Texas
Austin, Texas

Dr. Stanley King Walls
Paradise Enow
Cresskill, New Jersey

Professor John E. Walsh, Jr.
School of Business
Washington University
St. Louis, Missouri

Dr. Scott D. Walten
2795 Emerald Street
Eugene, Oregon

Professor Warren C. Waterhouse
College of Business Administration
Bowling Green State University
Bowling Green, Ohio

Professor Wilfred H. Watson
Waggener Hall, 103
University of Texas
Austin 12, Texas

Professor C. Edward Weber
2311 Forest Drive
Pittsburgh 35, Pennsylvania

Professor Rhea H. West, Jr.
1813 Yale Avenue
Knoxville 16, Tennessee

Mr. Wilford L. White
3131 Nebraska Avenue, N.W.
Washington 16, D.C.

Professor Arthur M. Whitehill
School of Business Admin. Box 190
University of North Carolina
Chapel Hill, North Carolina

Professor Richard J. Whiting
Los Angees State College
Los Angeles 32, California

Mr. W. H. Whyte, Editorial Dept.
Fortune — Time & Life Bldg.
Rockefeller Center
New York 20, New York

Prof. Edward D. Wickersham
College of Commerce
University of Detroit
Detroit 21, Michigan

Prof. Albert K. Wickensberg
School of Bus. Admin.
University of Minnesota
Minneapolis, Minnesota

Mr. Frederick J. Willett
Director of Research in Ind. Mgmt.
Univ. of Cambridge, Trumpington St.
Cambridge, England

Prof. Edgar G. Williams
1004 East Wylie
Bloomington, Indiana

Prof. Ralph D. Wilson
*School of Hotel & Rest. Mgt.
University of Denver
Denver, Colorado

Prof. William B. Wolf
College of Business Admin.
Univ. of Southern Calif.
Los Angees 7, California

Mr. G. Dow Worley, Jr.
1416 Fair Oaks
South Pasadena, California

Mr. James C. Worthy
Vice-Pres. Sears Roebuck & Co.
925 South Homan Ave.
Chicago 7, Illinois

Prof. Herman J. Wyngarden
407 Library Building
Michigan State University
East Lansing, Michigan

Professor Dale Yoder
Graduate School of Business
Stanford University
Stanford, California

Professor Raymond J. Ziegler
University of Illinois
424 David Kinley Hall
Urbana, Illinois

Prof. Herbert Zollitsch
College of Business Admin.
Marquette University
Milwaukee 3, Wisconsin